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Natural Foods in the American Dietary[1]

C. A. ELVEHJEM, Ph.D.
Department of Biochemistry, University of Wisconsin, Madison

IT IS unnecessary to remind this group of the increased interest in the general subject of nutrition during the past year or two. Few people did more to make this emphasis possible and probably no one would be more thrilled over the progress being made than Mary Swartz Rose, whom we are honoring tonight. However, she would also be the first to caution us against over-emphasis or the possibility of becoming lost in the seemingly attractive byways rather than following the more difficult highway of fundamental nutrition. So it seems to me we can honor her best by attempting to determine what she might say if she were here.

In Mrs. Rose's text, *The Foundations of Nutrition*, is a chapter familiar to most of you, the title of which has been condensed to "contributions of foods to diet." These simple words impress one because no mention is made of protective foods, refined foods or fortified foods; the comments are concerned merely with ordinary, everyday foods. It makes little difference whether we measure the contributions in terms of shares as Mrs. Rose liked to do or in fractions of daily allowances—it is with foods that the dietitian must deal. We may have to make temporary modifications from time to time but these additions or subtractions must be based upon what our natural foods contribute. It may seem superfluous to stress this very simple fact but if we follow the evolution of our knowledge of nutrition, we find that the emphasis on certain constituents of our diet has paralleled our ability to estimate these constituents in our food. Thus we were "calorie-conscious" after we learned how to measure the energy content of our foods; accent on protein, minerals and vitamins followed in the order mentioned. During the last war we were just beginning to recognize the existence of vitamins, and certain foods were found to be rich in the two or three vitamins that were familiar to us. This knowledge was applied in a practical way through the use of protective foods. In the present emergency we hear much about vitamin concentrates, fortification of foods, and so on, and we sit back with a sense of security because we have so many pure vitamins available. No one can deny the importance of these synthetic substances in clinical medicine or in certain problems of practical nutrition, but I am sure that it is most fortunate that we are beginning to obtain values for the vitamin content of all foods, however meager the amounts may be on a percentage basis.

[1] The First Annual Mary Swartz Rose Memorial Lecture presented before the Greater New York Dietetic Association, Hosack Hall, The New York Academy of Medicine, February 3, 1942.

VITAMIN ASSAY PROCEDURES

Let us look at some of the recent improvements in assay procedures relating specifically to the B-vitamins. Although the rat assay method is still recognized as the official method for vitamin B_1, both the thiochrome and the yeast fermentation methods give excellent results. A collaborative study recently sponsored by the Research Corporation showed a surprisingly close agreement between the three methods. With these improved methods it has been possible to determine the variations in the vitamin B_1 content of different varieties of wheat, for example, and the distribution of the thiamin in the wheat kernel itself. All these data are absolutely essential in planning the fortification program.

Although riboflavin was added to the group of B-vitamins much later than thiamin, we have been somewhat more fortunate as far as quantitative methods for this vitamin are concerned. The first successful bacteriological method for vitamin assay was that for riboflavin developed by Snell and Strong in 1939. This, together with the fluorometric methods, has permitted the accumulation of figures for the riboflavin content of most of our important foods. Some difficulty was encountered with materials low in riboflavin and high in starch, but this has now been remedied to a considerable extent and the older values are being corrected.

Many of you are familiar with the problems involved in establishing the antipellagra potency of foods. The results based on rat assays, of course, are erroneous since we now know that rats do not need nicotinic acid preformed in the diet. The dog assay, while reliable, is very long and tedious.

Chemical methods have been of considerable value for certain food materials but the simplest and most reliable procedure appears to be the microbiological method of Snell and Wright. In our laboratory this method has given excellent results for a large variety of foods, especially the cereals. It is now evident why pellagra is more prevalent among the corn-eating people than among those consuming wheat, since corn contains 1 to 2 mg. per cent of nicotinic acid while whole wheat contains 5 to 7 mg. per cent. Other cereals show similar variations; oats and rye, for example, contain 1 to 2 mg. and barley 4 to 5 mg. per cent. Other values range from 10 to 30 mg. per cent in fresh liver and yeast down to 0.2 mg. per cent in fresh fruits and vegetables. The value for milk has puzzled many of us but I believe most workers are willing to accept a figure of 0.8 to 1 mg. per quart. If this figure is correct, the beneficial effect of milk in pellagra reported by Goldberger must be dependent upon intestinal synthesis of nicotinic acid when the diet is rich in milk, rather than upon the actual amount of nicotinic acid supplied by the milk.

We still have to depend upon animal assays for estimating the vitamin B_6 content of natural materials. During the past year we have obtained values for a few foods but the results do not accumulate very fast when we can run only about ten determinations in one month. It is interesting that the vitamin B_6 distribution in foods is rather uniform. Many foods contain 4 to 6γ per gram of fresh material.

Although pantothenic acid was first recognized as a nutritional factor in a study on chicks, the bacteriological method of estimation is the most reliable procedure. Pantothenic acid deficiencies can be produced in rats, but the actual normal requirements seem to vary considerably, depending upon the presence of other unknown factors. A very recent finding is that certain foods must be digested with an enzyme before the total pantothenic acid can be estimated. The pantothenic acid content may vary from 60γ per gram of liver down to 2 to 3γ per gram of spinach.

I may have bored you with some of these details, but I want to emphasize that these methods are the backbone of any nutrition program. We must know the distribution of these factors before we can calculate adequate diets or give any consideration to fortification programs. We must remember that we do not necessarily obtain most of our vitamins from the so-called best sources, but from staple foods that appear in our diet every day and that may carry relatively low amounts of the vitamins in question. Just as the clinician is learning that there are many subclinical states of vitamin deficiency, so we must recognize the value of staple foods even if they are not bubbling over with vitamins.

NATURAL FOODS AS SOURCES OF VITAMINS AND MINERALS

How can we most effectively use the values that are being made available? First, let me indicate three ways in which they should not be used. I hope you will not use them for the purpose of glorifying specific foods. Why emphasize the fact that a serving of a certain food will supply the total daily allowance of a factor if we consume this food only once a month? Why rate one food higher than another just because a serving of it may supply one-half of the daily nicotinic acid allowance, while the other supplies only one-twentieth of the allowance, when the second food may supply one-half of the daily allowance of several other factors? It is unnecessary for me to dwell further on this point.

Second, I hope you will not generalize from one food to another when the proper values are not available. I know that one is tempted to do this in regard to the newer vitamins, but we have plenty of examples to indicate the danger of such a procedure. We learned many years ago that two minerals as closely related as calcium and phosphorus differ greatly in their distribution in foods. Hog liver is high in iron and low in copper, while beef liver is lower in iron and higher in copper. In early studies on vitamins A and D considerable difficulty was encountered in differentiating the two, but today the high amount of vitamin A and the complete absence of vitamin D in vegetable matter is common knowledge. In like manner we are beginning to recognize similar discrepancies in the various members of the vitamin B-complex. Cereals are high in thiamin, but low in riboflavin. Vegetables are high in riboflavin and low in thiamin and nicotinic acid. Pork is high in thiamin and beef is much lower. I have already mentioned that corn is low in nicotinic acid and wheat is high. Very recently we were surprised to find oats much higher than other cereals in pantothenic acid. We need the actual figures and I hope that you as dietitians will demand that they be made available.

Lastly, let us not compare the cost of a single vitamin when supplied in a natural food with the cost when supplied as a synthetic compound. I hate to give you the ratio of the cost of nicotinic acid as such and its cost when supplied in a medium-priced steak for fear someone will take the steak out of my diet, but the value is approximately 1 to 700. But I think you will agree that the steak supplies many other things, including taste appeal. Most of you will remember that we went through a similar period when it was definitely established that the mineral elements in simple salts were as available to the body as those in natural foods. There is no comparison between the cost of calcium in calcium carbonate and the calcium in milk, yet most of us are getting our calcium from the latter.

Today, due to the fact that some of the vitamins which used to be the costly part of our diet may be purchased at prices so low that they are difficult for us to comprehend, certain erroneous suggestions have been made concerning the cost of an average diet. It is true that one's yearly requirement of thiamin may now be purchased for about 50 cents and that of nicotinic acid for about 12 cents at wholesale prices, but it is unnecessary to remind this group of the actual cost of the energy and protein constituents of our diet. It is, of course, impossible even to estimate the cost of the unknown factors. Although I have been stressing the quantitative aspects of the vitamins, I would like to spend a little time discussing the newer factors.

ANIMAL STUDIES AS A BASIS IN DETERMINING HUMAN NEEDS

At present, any evidence of the need for additional vitamins by humans must be based upon animal studies. One factor which is definitely essential for many animals is choline. Indications that choline might be of nutritional significance came from the early studies of Best and McHenry and during the past year or two Griffith and Wade, and György and Goldblatt, have described hemorrhagic enlargement and degeneration of the kidneys in rats on low-choline diets. In rats the requirement is dependent upon absolute amounts of cystine and methionine in the ration, but in chicks the requirement approaches 0.2 per cent of the ration regardless of its amino-acid content. Chicks reared on rations low in choline developed typical perosis or slipped tendons. I doubt if anyone knows the human requirement for choline but it is obvious that the American dietary contains less choline today than previously due to the use of more refined fats and oils.

The number of additional essential factors depends entirely upon the kind of experimental animals used. If we were to use the cow or sheep, we might conclude that there is no need for the ingestion of the B-vitamins since evidence is accumulating to show that the bacteria in the rumen of these animals synthesize the known B-vitamins. For example, the rumen contents of the cow may contain 60 times as much riboflavin as the feed which the cow consumes. If rats are fed a synthetic diet supplemented with thiamin, riboflavin, pyridoxine, pantothenic acid, choline and the fat-soluble vitamins, the rate of growth is not quite normal but the animals will reach maturity and reproduce. We have in our laboratory third and fourth generation rats reared on such diets. Some workers conclude from these results that there are no additional factors, at present unidentified, which are necessary for growth. This I feel is an erroneous conclusion since increased rates of growth can be obtained in both rats and dogs by adding natural food materials such as liver extract and yeast. We feel that the additional factors required by the rat are synthesized by bacteria in the intestines. There are several indications which lead to such a conclusion. If rats on this synthetic diet are given a small amount of egg white, they will develop a spectacled-eye condition, spastic gait, and will show retarded growth. The addition of 1 to 2γ biotin per day will completely prevent these symptoms and will allow optimal growth. This indicates that without the egg white sufficient biotin is synthesized to meet the requirements of the rat. Further, if we feed rats on the synthetic diet plus 0.5 per cent sulfaguanidine, their rate of growth is greatly retarded. The addition of liver fractions in addition to the sulfaguanidine will allow the animals to grow normally. We interpret this to mean that sulfaguanidine inhibits the growth of certain types of organisms which produce the additional essential factors for the rat.

If we turn to the chick we can produce a biotin deficiency through nutritional means, which indicates that there is a very limited degree of synthesis of biotin in the intestinal tract of the chick. This biotin deficiency is readily cured through administration of a few micrograms of pure biotin. The chick still fails completely on synthetic diets even when biotin is supplied. Normal growth is obtained when certain additional amino-acids are given together with 2 per cent solubilized liver extract or a yeast extract. These materials supply at least two additional factors, one of which can be absorbed *on norit* and is probably identical with one of the known growth factors for *Lactobacillus casei* and related to the factor recently designated "folic acid" by Williams and co-workers. It is also possible to demonstrate the need for inositol in the diet of chicks. Woolley and others have shown the need for inositol in the diet of mice.

Work with guinea-pigs on synthetic diets has indicated that we must add at least three additional factors to secure normal growth: one present in yeast, one in grass, and one in milk. At the present time we do not know if some of these factors are the same as those described for the chick. Whether or not any of these factors is needed in human nutrition, I cannot say definitely, but from all past experience it is quite logical to suggest that many of these factors will be found to be of significance in human nutrition. It is impossible to give any quantitative figures for human requirements and the only thing that we can do is to emphasize again the importance of natural foods, and in some cases, at least, processed foods that have not undergone too great a degree of processing. Some of the factors needed by the guinea-pig and the chick are very labile and Williams has shown in a preliminary paper that folic acid is destroyed under the ordinary canning methods.

FACTORS AFFECTING VITAMIN REQUIREMENT

Before leaving these more recently known factors, I want to say a word about possible relationships between known and unknown factors. I do not want to open the entire question of daily requirements and the conditions affecting these requirements because all these factors were taken into consideration when the Committee on Food and Nutrition of the National Research Council selected the recommended daily allowances for all the better known nutrients. The values proposed by this Committee, therefore, can be used with confidence. However, I do want to point out that the level of a vitamin may exert effects which are not directly related to the minimum requirement for that specific factor. For example, if rats are placed on a synthetic diet low in riboflavin, poor growth results. Some of the rats may show alopecia, and a very few may show cataract. However, if this diet is modified in only one respect, that is, the isocaloric replacement of part of the sucrose with fat so that the diet contains 40 per cent fat, the animals show much more severe symptoms, especially a spastic gait and severe degeneration of the sciatic nerves. If sufficient riboflavin is given, the animals remain normal in every respect. Does the high-fat diet alter the metabolism to such an extent that the nervous tissues are depleted of their riboflavin content, or does the fat effect the synthesis of unknown factors in the intestinal tract when the riboflavin intake is below a certain level? I do not know, but all these indications suggest that we must be on the alert for additional relationships.

Another example: if rats are placed on a completely synthetic diet containing 80γ thiamin per 100 gm. ration, the animals grow slowly, about 7 gm. per week, and finally develop polyneuritis. Other rats given 100γ or 150γ per 100 gm. ration show correspondingly greater rates of growth. However, if to the basal ration we add 2 per cent sulfited liver extract which is devoid of thiamin, the rats will grow 20 gm. in weight per week on the 80γ level of thiamin. Does the high level of vitamin B_1 stimulate the intestinal synthesis of unknown factors supplied by the liver extract or does the liver extract stimulate the synthesis of more vitamin B_1 in the tract? These results are not given with the suggestion that they can be applied to human nutrition, but if results of this kind can occur in experimental animals, it is not impossible that related conditions may occur in humans on restricted diets.

MEANS OF CORRECTING NUTRITIONAL DEFICIENCIES

After this rather detailed discussion you may anticipate the suggestions that I am going to make concerning the effective use of the values for the distribution of vitamins in foods. If we cannot measure all factors we can at least calculate the adequacy of the known factors in various dietaries, whether individual, regional or national. We may find them to be deficient in several factors or only in thiamin, riboflavin, iron or nicotinic acid. The deficiencies in individual diets may be temporarily relieved with tablets, capsules or concentrates of vitamins but even here we must sooner or later depend upon foods. If we find deficiencies in regional diets we must turn to natural foods or food fortification of some kind. The use of natural foods will tend to prevent a lack of unknown factors as well as correct a deficiency in the factor originally recognized. However, this generalization is not necessarily always true. If an individual were on a diet low in thiamin and you recommended the use of whole grain cereals, I doubt that you would do much to correct a riboflavin deficiency if the diet were also low in this factor.

Again, it is unnecessary to discuss with this group methods of getting the proper natural foods into regional dietaries or the difficulties encountered in such programs. You are all more familiar with such educational and promotional programs than I am. I merely want to raise one question. Are the educational programs as effective as they should be for improving the nutrition of all classes of people? Much has been said about the increased milk consumption through education. I wonder how much of this increase has been due to improved quality of milk, more attractive containers for dispensing milk and to increased food budgets in many areas of the country. I think you will find that in those areas where these latter conditions do not exist we also find the largest incidence of riboflavin deficiency regardless of the educational programs that have been carried out.

When specific deficiencies have been encountered in definite regions, distinct benefits have resulted from fortification programs. The two best known of such programs include iodized salt and vitamin D milks. I wonder how many pounds of iodized salt and how many quarts of vitamin D milk have been sold due to educational programs, and how many have been purchased because the iodized salt was on the shelves of grocery stores and the bottles of milk in the delivery wagons? I do not intend to criticize educational programs but when you deal with foods you must handle them in such a way that the improved foods are available without the asking. The improved foods must be the usual and not the unusual products. The same is true of the fortification program which is receiving greatest attention today —the enriched flour and bread program. I hope that the enriched flour and bread will be found in all groceries and bakeries regardless of size, appearance or location and that millers and bakers will not depend too much upon consumer demand for the specific enriched products. Some of you may think that this emphasis on enriched flour and bread is contradictory to the title of the lecture. Far from it.

The program is sound under the present conditions and falls under the category mentioned at the beginning: namely, we may have to make temporary modifications from time to time but these additions and subtractions must be based upon what our natural food contributes. We have found certain deficiencies in the American population and we have learned how these deficiencies can be compensated for to some extent; let us therefore encourage the present procedure as much as possible. There is no competition between whole wheat and enriched white bread; anyone can manufacture, sell, buy or consume whole wheat bread, but if they manufacture, sell, buy or consume white bread, it should be enriched.

Some have criticized the enrichment program on the basis that the addition of certain members of the B-complex without the addition of all of them will result in an imbalance. Again, facts will answer this question. Table 1 shows that only 50 per cent of the vitamin B_6 and pantothenic acid originally present in wheat is lost during the milling process, while

TABLE 1

Vitamin content of wheat and flour

	WHOLE WHEAT	PATENT FLOUR	ENRICHED FLOUR
	mg./lb.	*mg./lb.*	*mg./lb.*
Thiamin	1.8– 2.7	0.2–0.4	1.6– 2.5*
Riboflavin	0.4– 1.0	0.2–0.4	1.2– 1.8*
Nicotinic acid	22 –30	3.5–4.0	6 –24*
Pyridoxine	1.8– 2.2	0.9–1.1	0.9– 1.1
Pantothenic acid	4.5– 5.4	2.2–2.7	2.2– 2.7

* Values recommended for enriched flour by the Committee on Food and Nutrition, National Research Council.

80 to 90 per cent of the thiamin and nicotinic acid is lost. The only possible criticism I can make is that the attempt to add three or four factors at once has introduced so many problems that the rate of progress is reduced. But this suggestion is immediately answered by the facts which show that we are encountering more than one deficiency.

This very condition introduces the next point that I want to make. If we had followed a little more carefully the changes in our dietary intake as a result of using some of our processed foods, we would not have to cope with so many deficiencies at one time. Surely we have known about the reduced thiamin content of patent flour for some time. I am afraid we waited for clinical observations to force us into action. Nicotinic acid and riboflavin deficiencies were found to be prevalent in large groups of people before any attempt was made to remedy the cause. Would it not be better for the dietitian to take the initiative, first determining and then preventing any changes in the American dietary which cannot help but lead to severe deficiencies?

At present, workers are trying to find clear-cut pyridoxine and pantothenic acid deficiencies in humans. These deficiencies may be more prevalent than our present meager methods of detection indicate, but my guess is that these deficiencies will not be so widespread as riboflavin and nicotinic acid deficiencies have been during the past decade. Why? Because values for the distribution of these factors indicate that foods as they reach our tables carry a proportionately larger amount of these two factors. No one, perhaps, can predict when changes in our food supply might reduce such intakes, but with all the available knowledge we now have such changes when they occur can be detected and deficiencies averted before they become serious. Large varieties of diets can now be assayed with not too much difficulty. One of the most interesting methods is that devised by Dr. Helen Parsons, who takes all the foods served at the three meals in one day, homogenizes the entire material and makes a single determination. The nutrients contributed by typical diets can thus be readily obtained.

I know that you cannot develop assay methods or make extensive assays, but you can demand that at least part of the money spent in glorifying certain food products through advertising should be used in the laboratory. You can also ask that a little less money be spent for highly illustrated brochures and a little more for laboratory notebooks and the necessary staff and equipment to put facts into these notebooks.

Certain proposals were made at the 1941 National Nutrition Conference in Washington to inaugurate surveys on unprocessed and processed foodstuffs in respect to their mineral and vitamin content. Few people have grasped the real significance of this suggestion or realized the tremendous amount of work that lies ahead. Dr. Alonzo E. Taylor has put these problems into words which should appeal to all those interested in nutrition. They may be found in No. 3, Volume 18, of the wheat studies of the Food Research Institute and include among others, these statements: "Looking over the whole field, one sees variability. Obviously, with many trends in one direction, an apparently normal diet might be significantly low in vitamins, while the same diet—at another time and in another place, and purchased on the same basis of household criteria—might be competent in the same vitamins and minerals. It is this uncertainty which leads physicians particularly concerned with vitamin-deficiency diseases to insist upon a higher factor of safety, representing the native instinct of playing safe in the absence of information." We can obviate this difficulty by studying actual diets rather than dietary ingredients.

Dr. Taylor continues:

"Now this entire area is a field, not for conjecture or approximate appraisal, but for analyses and measurements. Years will be needed to fill in the data

already indicated in a provisional manner by the fragmentary knowledge already available. . . . What is necessary is to have clear-cut physical and chemical methods which can be used in large numbers, in duplicate for checks, and requiring no more skill than is needed in the estimation, for example, of total nitrogen in biological material." Finally, in speaking of cost relations, he states, "It is safe to say that the practical progress of this reform depends more upon declining price of vitamins than upon the rising education of the consuming public."

SUMMARY

In summary, I find that I have stressed two points: first, the necessity of more accurate information regarding the distribution of essential nutrients in all foods; and second, a more careful consideration of the type of educational and promotional methods used to induce the entire public to believe that improved nutrition pays dividends. Both of these problems are intimately related with the very active life of Mrs. Rose. In reference to her researches, Dr. Sherman states, "Planning her research as she did, with reference to the needs of our science as she saw it and without any anxiety as to individual fame. . . ." Everyone realizes that routine vitamin assays are not very interesting, but they are essential.

Those of you who remember the classic address by Mrs. Rose, "Belief in Magic," before the American Dietetic Association just 10 years ago, know that she was highly critical of the extensive perversion of scientific findings for one's own ends. She did much to counteract such attitudes by her unrelenting teaching of the actual facts. Again in the words of Dr. Sherman, "Her knowledge and skill she gave also to the carrying of the new science of nutrition directly into public service; and on all fronts." In asking for the successful solution of the problems raised this evening, we are not only expanding the research work started by Mrs. Rose, but we are carrying out the suggestions made in her teachings. Solution of some of these problems will ensure a more sensible use of our natural food supply and a more adequate nutrition for everyone.

The Graying of Hair

Enlarge the hair a thousand times and it will be seen to contain a great many grains of melanin which directly or indirectly have been abstracted by it from the blood. Make a count of the hair that man cuts and loses during his life—the material thus eliminated will assume a respectable proportion.

The ordinary graying of hair signifies not that the melanin is changing in or losing color but that less and less of it is formed and hence present. The thoroughly "gray" or white hair is that which is entirely free from all melanin. Now it is quite conceivable that under starvation or prolonged severe nervous stresses the production of melanin, and hence its elimination, may be diminished or even cease and that when conditions are restored to normal the formation and elimination of the substance through the hair recommence, as had evidently taken place in the case of Major Greely. A really sudden grayness, however, would seem impossible, for the melanin is dead and inert and cannot possibly be decolored by any mental effect. If sudden graying is a reality, which has not yet been scientifically established, then the loss of color must be due to other factors—perhaps the sometimes suggested bubbles of gas in the medulla of the hair.

If the hair and its "pigment" are viewed in this manner and the normal graying is regarded as a gradual decline in the production of melanin, it is difficult to see how any vitamin or other substance given to the subject could restore former conditions. Something of this nature could conceivably be possible for a time in the early stages of the process but would steadily grow more difficult with time until it became impossible. It would be in vain, it would appear, to expect now or in the future more from drugs or other substances than a possible delay of graying, or a partial halting of the process, with perhaps moderate restoration for a time, during the earlier stages of the graying period.—*From Correspondence, J. A. M. A., 118: 918, 1942. Ales Hrdlicka, M.D., Curator, Division of Physical Anthropology, Smithsonian Institution, Washington, D. C.*

An Experience with Low-Cost Diets[1]

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AT THE first meeting of the Texas State Nutrition Committee in August 1940 there was much discussion of the dietary recommendations contained in the Texas Food Standard[2], then in the making. Some members maintained that families on low income, whether or not on relief rolls, could never meet such a standard. Others expressed the opinion that an adequate diet could be obtained in Texas for less than 20 cents per person per day, the approximate price paid by some of the committee members to obtain Stiebeling's "adequate diet at minimum cost." The discussion led to the appointment of a subcommittee of five nutritionists to study the question of low-cost diets. The chairman of this subcommittee suggested that each member, working independently, try to plan a diet that would meet current standards at a cost of no more than 10 cents per person per day, when every article of food had to be bought.

It occurred to the author, a member of the subcommittee, that the ultimate, practical test of the satisfying qualities of a low-cost diet—the eating thereof—might well be made along with the working out of meal plans on paper and the calculating of nutritive values. The satisfying qualities of a diet are no less important than the nutritive value; indeed, palatability may determine whether or not a diet will actually be used. And so the eating of low-cost diets afforded the experience reported here.

Seven low-cost diets were tried out. In this report the diets are numbered according to the order in which they were eaten. Diet No. 1 was the author's first attempt to hit the mark set for the committee. In an effort to come nearer hitting the bull's-eye, diet No. 2, largely a repetition of diet No. 1, was served to the four women who ate diet No. 1 and to two men in addition. Each of the other four committee members purchased food for her diet in her own locality at a cost lower than the author's at College Station. Could the variation in prices in the different localities be the whole explanation of the lower cost of their diets? How would the diet group react if low-cost menus were served long enough to make the test of practical value? These considerations prompted the use of the plans of other committee members, diets No. 3, 4, 5, and 6, as well as a third one planned by the author, No. 7. Diet No. 3 was designed to show the possibility of good selection of foods to make up an inexpensive diet containing very few articles. Often the foods in such diets are poorly chosen with consequent nutritive inadequacy. Diet No. 5 featured peanuts, a very economical food and an important crop in Texas. The remaining diets were very similar to each other in that they were as nearly like the customary well-selected diet as was possible with the use of only the cheapest available representatives of the several food groups. However, diet No. 7 (the author's) was more liberal than any other in its content of meat and eggs, the special object of this diet being to determine the lowest cost at College Station at which the Texas Food Standard could be followed without the permitted substitution of peas, beans or nuts for meat or eggs.

A record of the total weight of each food used in each diet was made by the inventory method. There was no attempt to record individual consumption, nor to control the amount eaten. Each person allowed his appetite to be his guide, though it was the rule that every serving be consumed entirely. All diets were served family-style in the home of the author and her housemate, both of whom, along with their negro maid, were members of the group that ate each diet.

The author and the maid did the cooking. In each diet, ordinary methods of preparation were used, and variety was achieved mainly through different ways of preparation. For example, in diet No. 1 raw cabbage was served six times in the five days but

[1] Received for publication February 20, 1942. Approved for publication as technical contribution No. 733 from the Texas Agricultural Experiment Station.

[2] This standard calls for a good daily diet to include 1 pt. to 1 qt. milk; 1 egg; 1 serving meat, poultry, fish or cheese; I serving Irish or sweet potatoes; 1 serving green or yellow vegetables; 1 other serving vegetable; 1 serving citrus fruit, tomatoes, raw cabbage, strawberries, or melons; 1 other serving fruit; 1 serving whole grain products; other cereals and bread as desired; butter, or margarine with vitamins added; some sweets; and 6 to 8 glasses of water. Dried beans, peas, or nuts may be substituted for eggs or meat; dried peas or beans may be the other serving of vegetable.

three different dressings were used, and on two occasions carrots were combined with the cabbage; pears, served nine times, were prepared in six different ways; the flavor of meat was stretched by using small amounts with chili beans, with dressing, and in vegetable stew, in addition to serving an occasional small portion of meat as such. The simple cooking was carefully done, and a point was made of utilizing left-overs attractively.

Ten adults, four men and six women, served as regular members of the diet groups. Some participated in all diets; others in only part. One of the four men was an instructor; two were researchers; and one, an Extension Service specialist. The six women included the maid, two home economics researchers, and three in Extension Service. In addition, two other Extension Service women and a man student were substitutes; one of them ate but one meal, another ate two meals, and the third filled in one day at one time and at two meals at another time. Otherwise there were no irregularities. The occupation of five members of the diet groups would be rated as sedentary; that of the remaining five moderately active, with the maid's and probably the author's approaching very active. Body weight, with clothing, for the men ranged from 150 to 187 lb.; for the women, from 109 to 173 lb.

The first diet was served to four women for five days. Each of the remaining diets, varying in duration from three to seven days, was eaten by six persons, four women and two men. The seven diets together covered a period of 34 days.

The menus for each of six diets are given as actually eaten except that coffee does not appear. Diet No. 1, being very similar to No. 2, is omitted. As a concession, coffee with cream and sugar was served, at breakfast only, to those accustomed to it, but neither the cost nor nutritive value was included in the calculations.

The foods used in each diet have been grouped (table 1) on the basis of composition and consideration of customary use in meal planning to show amounts (E.P.) used, and distribution of cost. Although food group names indicate food items included, the following explanations are in order: The item, milk, includes cheese (used only in diet No. 6). Salt pork is included under meats, rather than fats, because salt pork is, in a sense, meat; as part of a meal, salt pork contributes to that gustatory satisfaction obtained by the use of meats; lean streaks of salt pork contribute a high quality of protein comparable in amount to that in what is commonly called a "meat substitute" such as cooked legumes; and finally, salt pork, when fried, loses fully half its fat in cooking, and actually does not serve to replace butter or butter substitute in a meal but does serve as a meat. Fish was not used because the meats used were cheaper and iodine was provided by milk, whole cereals, and vegetables. Legumes used were Lima, navy, and pinto beans, blackeye and other cow-peas, but not lentils, since these are seldom used in this locality. Peanuts, although a legume, are included in a separate group chiefly because they are featured in one diet, and because their use varies considerably from that of peas and beans. Tomatoes are included with the vegetables.

It should be kept in mind that the cost of these diets is based on the local prices at College Station and that every bit of food was purchased. With few exceptions the prices of foods used were the same for the several diets. Pasteurized skim milk cost 10 cents per gallon delivered, buttermilk, 7 cents per quart, and evaporated milk from 6.3 to 9 cents per tall can. Margarine fortified with vitamin A was bought for 18 cents per lb. Eggs were 25 cents per dozen in November, 18 cents in January, and 15 cents through March. Prices of meats ranged from 12.5 to 17 cents per pound, most of that used costing 15 or 16 cents. Pinto beans cost 6 cents per pound, Lima, 6.5, and navy, 8.3 cents. Blackeye peas were $3\frac{1}{4}$ lb. for 25 cents. Irish potatoes fell from 3 cents per pound in November to 1.7 cents in January and February, then to 1.5 cents for the remainder of the time. Carrots, which were bought at 2 bunches for 9 cents in November, dropped to 3 bunches for 10 cents during January and February, then to 2 bunches for 5 cents the first of March, but were again 2 bunches for 9 cents the last of the month. Beets were 3 bunches for 10 cents; tomatoes, 33 to 35 cents for a No. 10 can; onions, 3 lb. for 10 cents; collards, mustard greens, Swiss chard, and turnip greens, each bunch, 5 cents. Cabbage ranged from 2 to 4 cents per pound. A 15-oz. package of dried apples or peaches cost 14 cents; prunes, 2 lb. for 25 cents; raisins, 4 lb. for 29 cents; pears, 50 cents per bushel; small oranges, 2 doz. for 35 cents and one-half bushel (62) for 65 cents; small grapefruit, 19 and 23 cents per dozen. Advantage was taken of bargains on week-ends and quantities thought reasonable for low-income families were purchased, such as: 4-lb. package of lard at 31 or 32 cents; 10-lb. bag of sugar at 47 to 49 cents; 1 gal. sorghum, 69 cents; 12-lb. bag of white flour 37 or 39 cents, or of whole wheat, 45 cents; 10 lb. whole corn meal, 25 cents; rolled oats, 3-lb. box 19 cents. If it were feasible to buy in still larger quantities, or if as much as possible were produced at home, say of vegetables, fruits, eggs, and milk, the outlay of money for such meals could be materially reduced.

Note that with the exception of diet No. 7, none has a total cost greater than 14 cents per person per day. The higher cost of diet No. 1 compared with No. 2 is to be accounted for chiefly by the higher prices of vegetables and eggs in November 1940 than in January 1941 and less use of home-made bread in diet No. 1. Diet No. 4 cost more than diet No. 2 chiefly because of the greater cost of buttermilk than of skim milk, the use of commercial salad dressing, and

TABLE 1

Amount of foods used and distribution of cost among food groups (per person per day)

FOOD GROUP	AMOUNTS* USED IN DIETS							DISTRIBUTION OF COST																
								Diet No. 1		Diet No. 2		Diet No. 3		Diet No. 4		Diet No. 5		Diet No. 6		Diet No. 7				
	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	Nov. 11–15, 1940		Jan. 25–30, 1941		Feb. 13–15, 1941		Feb. 17–23, 1941		Feb. 24–26, 1941		Feb. 27–Mar. 2, 1941		Mar. 25–31, 1941				
								dollars	*per cent*	*dollars*	*per cent*	*dollars*	*per cent*	*dollars*	*per cent*	*dollars*	*per cent*	*dollars*	*per cent*	*dollars*	*per cent*			
Milk**	34.40	29.39	8.06	15.22	8.28	4.81	34.40	.0250	17.99	.0214	17.15	.0302	24.47	.0315	22.42	.0181	13.73	.0161	12.69	.0250	13.55			
Eggs	.32	.31		.34		.33	1.60	.0042	3.02	.0029	2.34			.0027	1.92			.0026	2.05	.0125	6.78			
Meats	2.65	2.10	1.00	1.54	1.14	2.48	5.15	.0260	18.71	.0254	20.39	.0114	9.24	.0156	11.10	.0107	8.12	.0205	16.15	.0465	25.20			
Peanuts				.14	2.06		.31							.0008	0.57	.0181	13.75			.0024	1.30			
Fats	1.36	1.50	1.91	2.72	2.58	1.67	1.83	.0128	9.21	.0141	11.32	.0214	17.34	.0229	16.30	.0291	22.08	.0154	12.14	.0177	9.59			
Cereals, whole	1.43	3.39	4.39	3.01	4.26	2.17	3.36	.0031	2.23	.0095	7.62	.0077	6.24	.0070	4.98	.0066	5.01	.0096	3.63	.0099	5.37			
Cereals, refined	2.84	2.22	1.14	2.95	.02	4.25	3.34	.0156	11.22	.0044	3.53	.0023	1.86	.0064	4.56	.0004	0.30	.0147	11.60	.0070	3.79			
Vegetables:																								
Legumes	1.07	.58	1.95	1.54	1.86	.92	.44	.0049	3.53	.0022	1.77	.0094	7.62	.0075	5.34	.0116	8.80	.0045	3.55	.0018	0.98			
Potatoes	4.90	6.25	6.02	5.59	2.11	5.98	7.06	.0092	6.62	.0087	6.98	.0095	7.70	.0083	5.91	.0059	4.48	.0066	5.21	.0099	5.37			
Green and yellow	5.30	3.92	3.06	4.01	4.89	7.38	4.75	.0170	2.23	.0089	7.14	.0079	6.40	.0113	8.04	.0093	7.06	.0127	10.02	.0122	6.61			
Others	1.15	3.33	4.33	1.58	4.74	3.73	4.11	.0024	1.73	.0089	7.14	.0095	7.70	.0034	2.42	.0135	10.24	.0123	9.71	.0109	5.91			
Fruits:																								
Citrus		.56					2.93			.0017	1.36									.0085	4.61			
Other	.41	.80		1.08		.79	1.32	.0039	2.81	.0062	4.98			.0091	6.48			.0066	5.21	.0096	5.20			
Sweets	1.50	1.70	2.56	2.03	1.06	1.27	2.04	.0064	4.60	.0061	4.91	.0091	7.37	.0067	4.77	.0038	2.88	.0039	3.07	.0066	3.58			
Accessories:																								
Salt	.25	.29	.39	.36	.39	.38	.32																	
B.P. and soda	½ t	½ t	½ t	1½ t	½ t	1½ t	½ t																	
Vinegar	¾ T	½ T	⅔ T	⅙ T	1 T	¼ T	½ T	.0085	6.12	.0042	3.27	.0050	4.05	.0073	5.20	.0047	3.57	.0062	4.96	.0040	2.17			
Spices	½ t	1/15 t		⅜ t			⅛ t																	
Corn starch	.06																							
Total								.1390	100.02	.1246	99.90	.1234	99.99	.1405	100.01	.1318	100.02	.1267	99.99	.1845	100.01			

* Ounces unless otherwise indicated.

** Milk–fluid basis. Evaporated milk used wholly in diets No. 3 and 5; in part, diets No. 4 and 6.

the great amount of baking powder-breads and cakes. In diet No. 7, daily inclusion of ¼ lb. meat per person, as well as the equivalent of one egg apiece and either citrus fruit or tomato made the cost highest of any, even though only 18.3 cents per person per day.

Interestingly enough, diets No. 3 and 4 conform to Sherman's suggestion that approximately half the food money be spent for fruits, vegetables and milk, including milk products. The other diets, too, are not far from that guide with 41 to 46 per cent of the food money spent for these foods.

To determine the approximate nutritive content, the 1936 edition of Rose's *Laboratory Handbook for Dietetics* was used for calories, protein, calcium, phosphorus, and iron, excepting for salt pork, samples of which were analyzed in the Division of Chemistry of the Texas Agricultural Experiment Station. Sherman and Lanford's *Essentials of Nutrition* was used for vitamins, the average being used for all foods for which a range of values is given. Calculations were made for the entire amount of each food used in each diet, the total for each nutritive item obtained by addition, and values per person per day derived by dividing each sum by the appropriate figure. The calculated nutritive value of each diet and comparison with recommended allowances are shown in table 2.

TABLE 2

Comparison of average nutritive values of low-cost diets with recommended allowances

	Cost	Calories**	Prot. gm.	Ca gm.	P gm.	Fe gm.	Vitamin A I.U.	Thiamin mg.	Ascorbic acid mg.	Riboflavin mg.
RECOMMENDED ALLOWANCES PER ADULT PER DAY (Including range of values for a woman sedentary to very active, and for a man sedentary to moderately active)*		2100–3000	60–70	.8	1.32	.012	5000	1.2–1.8	70–75	1.8–2.7
LOW-COST DIETS										
No. 1	0.1393	1848	70.95	1.445	1.612	.0125	2280	1.729	57	3.132
No. 2	0.1244	2007	68.83	1.278	1.476	.0131	4429	1.298	69	2.557
No. 3	0.1236	2003	51.36	0.890	1.052	.0170	13807	1.029	76	1.085
No. 4	0.1404	2137	60.18	0.940	1.243	.0230	9847	1.317	60	1.274
No. 5	0.1317	2144	58.99	0.744	1.165	.0128	5225	1.083	78	1.277
No. 6	0.1267	1894	59.92	0.711	1.041	.0188	9753	1.320	93	1.783
No. 7	0.1831	2498	102.02	1.579	1.942	.0228	10618	2.011	106	3.350
Average.....	0.1385	2076	67.46	1.084	1.362	.0171	7994	1.398	77	2.065

* Phosphorus, Sherman; other values, Committee on Food and Nutrition, National Research Council.

** Those who drank coffee with cream and sugar received, in addition, approximately 80 calories.

Even though these data are not based on analysis of the individual diets, there is impressive evidence that when ordinary, inexpensive foods are properly selected, the currently recommended dietary allowances can be met. In only a few instances are there shortages and these are not serious. Diets No. 1 and 6 are slightly low in calories; No. 3, a trifle low in protein; No. 5 and 6, in calcium; No. 3 and 6, in phosphorus; No. 1 and possibly 2, in vitamin A; No. 3 and 5, in thiamin; No. 1 and 4, in ascorbic acid; and No. 3, 4, and 5, in riboflavin. Some concern for provision of nicotinic acid may be felt, especially with diets No. 3 and 5, but the others contained several foods, such as liver, whole cereals including yeast bread, egg, and meat, which are good sources of nicotinic acid.

Diet No. 1, with a total addition for the 5-day period of 8 oz. sugar, 12 oz. peanuts, 5 oz. margarine, and 1 No. 2 can tomatoes, would provide 2100 calories and 2688 I. U. vitamin A daily, and meet all other allowances at an additional cost of $0.012, bringing the total cost to $0.151 per person per day. Sweet potatoes substituted for part of the white potatoes would greatly increase the content of vitamin A and affect the cost but slightly. Addition of 1 pt. skim milk per person per day (cost $0.013 at College Station and most of which could easily be used in cooking), to diets No. 3, 4, 5, and 6 would add materially to the content of protein, calcium, phosphorus, thiamin, and riboflavin. With the suggested additions, only caloric value would need to be increased to make any of the diets provide adequately for persons doing severe muscular work. The most economical way to do this would be to add cereal, preferably whole grain, and margarine.

The extent to which diet No. 7 exceeds the allowances for a sedentary and moderately active woman is noteworthy. The generous supply of calcium comes mainly from the liberal use of skim milk, 1 quart per person per day. Whole cereals, eggs, and meat daily bring up the protein, phosphorus, iron, thiamin, and riboflavin content, while sweet potatoes, carrots, Swiss chard, tomatoes, cabbage, and

DIET NO. 2

Breakfast	*Lunch*	*Dinner*
	Saturday, January 25	
Cold canned tomatoes Rolled oats cooked in milk Hot milk and sugar for cereal Margarine	Scalloped potatoes Raw carrots Biscuit Margarine Sorghum	Fried salt pork Milk gravy (browned flour) Beet greens Baked sweet potatoes Corn-pone Milk to drink Margarine
	Sunday, January 26	
Grapefruit halves Rolled oats cooked in milk Hot milk and sugar Margarine	Beef stew Noodles in beef broth Mashed potatoes Cabbage slaw, sour gravy dressing Hot whole wheat rolls Margarine Baked custard (orange rind to flavor)	Hominy flakes cooked in milk Cold canned tomatoes Sliced raw onions Raw carrots Whole wheat bread (for men) Hot whole wheat ginger cake Milk to drink Margarine
	Monday, January 27	
Stewed dried peaches Whole wheat toast Margarine Hot milk for 2	Salad (3 c. shredded cabbage, 1 c. carrots, 1 c. raisins. Dressing: salt, sugar, vinegar, milk) Hot mush made with milk Syrup Milk to drink Margarine	Meat loaf, milk gravy Baked potatoes Hot beets Reheated rolls Margarine Milk to drink
	Tuesday, January 28	
Stewed dried apples Rolled oats cooked in milk Hot milk for 2 Margarine	Cream of potato soup (left-over scalloped potatoes and onion) Whole wheat toast Margarine Reheated ginger cake	Stewed pinto beans, salt pork fat added Fried salt pork Raw carrot Yeast corn bread Margarine Milk to drink
	Wednesday, January 29	
Stewed dried apples Fried mush (mush made with milk) Margarine Sorghum Hot milk for 2	Reheated noodles Reheated mashed potatoes Shredded cabbage salad (dressing: crisp salt pork bits, salt, hot vinegar) Whole wheat bread (baker's) Margarine Custard Cinnamon toast (home-made whole wheat bread, oven-toasted)	Vegetable stew (meat broth, potato, carrot, onion) Beets and greens, with salt pork fat Margarine Hot yeast corn bread Sweet potato-raisin casserole Milk to drink
	Thursday, January 30	
Stewed raisins Toasted corn meal loaf with hot milk Margarine Hot milk for 2	Potato-bean-milk purée Oatmeal pancakes Sorghum Margarine Milk to drink	Fried beef scrapple Fried potatoes (left-over) Cabbage with sour gravy Reheated sweet potato-raisin casserole Milk to drink Shortcake: reheated biscuit, margarine, sugar, and stewed dried apple, orange sauce Margarine

DIET NO. 3

Breakfast	*Lunch*	*Dinner*
	Thursday, February 13	
Whole wheat biscuit Margarine Molasses Hot water and evaporated milk, sugar	Baked sweet potatoes Margarine Shredded cabbage (dressing: crisp salt pork bits, salt, sugar, hot vinegar) Corn-pone Reheated biscuit Sorghum	Blackeye peas, with salt pork bits and fat Turnip greens with salt pork fat Biscuit Sorghum Evaporated milk Margarine

DIET NO. 3—*Concluded*

Breakfast	*Lunch*	*Dinner*
	Friday, February 14	
Fried mush	Baked potatoes	Blackeye peas
Sorghum	Shredded cabbage (hot dressing as above)	Salt pork (½ slice each)
Evaporated milk	Evaporated milk	Onions stewed with salt pork fat for 4
Margarine	Corn-pone	Stewed turnips for 1
	Reheated fried mush	Reheated turnip greens for 1
	Margarine	Reheated biscuit
		Sorghum
		Margarine
	Saturday, February 15	
Fried mush	Mashed sweet potatoes with salt pork fat	Fried salt pork
Sorghum	Shredded cabbage (hot dressing as above)	Blackeye peas with salt pork fat
Evaporated milk	Corn-pone	Stewed turnips with pork fat
Margarine	Reheated fried mush	Biscuit
	Margarine	Sorghum
		Evaporated milk (1 glass each)
		Margarine

citrus fruits afford a superabundance of vitamin A and ascorbic acid.

Special interest attaches to the average values of the data in table 2. The averages are in closer agreement with the standard allowances than are the values of any single diet. The differences between the diets are probably in line with the daily variation in actual individual food intakes. The diets as a series appear to have provided adequately for those who ate them.

There were two other indications of the satisfactoriness of these low-cost diets: one, the effect on body weight; the other, the psychological reaction of those who ate the diets. At the beginning and at the end of each series, each person weighed on the same scale at the same hour of day, wearing the same clothing, and with urinary bladder empty. Changes in weight, of course, are not an exact measure of the effect of the diets on body weight (balance of total individual intake and outgo would be necessary to determine that) but they do roughly indicate their adequacy for maintenance. A change in body weight up to 1 lb. is probably not significant. Only in diet No. 3 on which the group averaged a loss of 1 lb. 12.5 oz. was the average weight change of the group in excess of 12 oz. On diet No. 3 one person maintained weight, the remaining five lost from 1 to 4 lb. On diet No. 5 only one person gained (1 lb.), and losses ranged from 8 oz. to 1 lb. 12 oz. Diet No. 1 permitted one of four persons to gain 12 oz., and the three losses ranged from 8 oz. to 1 lb. 12 oz. The author, who lost 8 oz., again lost that same amount the following week when she was on her regular diet and doing the same kind of laboratory but not home kitchen work she had performed during the low-cost diet.

Diets No. 2, 4, 6 and 7 approached adequacy as indicated by influence on body weight, the number who showed no change or who gained in weight equalling or exceeding the number who lost. With two exceptions (one gain of 2 lb. 12 oz., one loss of 2 lb.) no change on these four diets exceeded 1 lb. 8 oz. and the average change on each was under 4 oz. At the start of diet No. 7, one person weighed more than ever before. The loss of 2 lb. occurred in the first four days on this diet; she admits that in an effort to prevent gaining weight, she may have unintentionally eaten too little. No explanation has been found of the loss on this diet of 1 lb. 2 oz. by another person who gained on five other diets. In general, there seems sufficient evidence in this record to conclude that low-cost diets can be made entirely satisfactory for maintenance of adult body weight. That diets No. 3 and 5 with the same caloric value as diet No. 2 and higher than No. 6, nevertheless were not so satisfactory in maintaining body weight, raises important questions for further study.

At the end of each diet except No. 1, each member of the group detailed his reactions to the diet. The tenor of the several comments was essentially the same for each diet. With one accord, diets which included a greater variety of foods, especially meat, fruits, and vegetables, were preferred to those having limited variety. Even such a tiny amount as 5 oz. ham for six people at one meal and 4 oz. at another was enough to help keep the group happy. Families accustomed to a limited number of foods might be perfectly satisfied with the less varied meals as in diets No. 3 and 5, but the persons who participated in this dietary experience distinctly missed fruits, vegetables, meat, and desserts. All these foods can be included to a certain extent even in low-cost diets.

One typical comment on each diet is quoted; no two quotations are from the same person.

Diet No. 2: This was a good normal diet. It included fruit and some meat (although not enough for this appetite). In this diet I had my first introduction to corn meal

DIET NO. 4

Breakfast	*Lunch*	*Dinner*
	Monday, February 17	
Yellow corn meal mush and raisins Evaporated milk and sugar for mush Hot coffee cake Skim milk to drink Margarine	Fried salt jowl Corn bread Creamed onions Cabbage salad, commercial mayonnaise Hot oatmeal cookies Margarine	Boiled pinto beans Fried potatoes Turnip-carrot salad, commercial mayonnaise Boston brown bread Prunes Oatmeal cookies Margarine
	Tuesday, February 18	
Rolled oats Evaporated milk and sugar for cereal Margarine Hot gingerbread	Boiled navy beans with pork skins Sautéd potatoes Collard greens with small amount salt jowl Corn-pone Oatmeal cookies Skim milk to drink Margarine	Hot rice Cabbage salad, commercial mayonnaise Stewed rutabagas Peanut butter bread Margarine Oatmeal cookies Skim milk to drink
	Wednesday, February 19	
Whole grain wheat cereal Evaporated milk and sugar for cereal Prunes Fried mush Margarine	Sliced boiled ham hock Gravy Baked sweet potatoes Mustard greens Margarine Corn muffins	Creamed cabbage Raw carrot strips Peanut butter bread Reheated mush and pone Stewed dried apples Buttermilk to drink Margarine
	Thursday, February 20	
Whole grain wheat cereal Evaporated milk and sugar for cereal Prunes Hot biscuit (⅓ whole wheat) Margarine	Blackeye peas Glazed carrots Baked potatoes Corn-pone Broiled apple rings	Navy bean soup Creamed ham hock Wilted mustard greens, hot dressing Toasted whole wheat biscuit and fresh hot (white) biscuit Reheated mush and raisins, evaporated milk and sugar Buttermilk for 5 Evaporated milk for 1 Margarine
	Friday, February 21	
Whole wheat hot cakes Margarine Sorghum Skim milk to drink	Yellow corn meal dumplings in ham broth Sweet potato fluff Turnips and greens Margarine	Boiled pinto beans Sliced raw onions Cabbage slaw Corn meal muffins Margarine Molasses cake
	Saturday, February 22	
Prune juice Fried salt jowl Milk gravy Whole wheat biscuits Margarine	Pinto beans Reheated collards Baked potatoes Corn meal muffins Reheated whole wheat and molasses cake, vanilla sauce Margarine	Fried blackeye peas Tomato sauce Sautéd potatoes Turnip-apple salad Salt pork, floured and fried Boston brown bread sandwiches (filling: prunes and peanut butter) Margarine Buttermilk to drink
	Sunday, February 23	
Rolled oats Evaporated milk and sugar for cereal Hot biscuit Margarine Sorghum	Sliced ham hock Hot rice Gravy made with ham broth and milk Baked sweet potatoes Corn-pone Boston brown bread, vanilla sauce Boston brown bread sandwiches Margarine	Bread dressing with 4 slices salt pork in crisp bits Gravy (water) Cabbage salad Hot coffee cake, caramel sauce Buttermilk to drink Margarine

DIET NO. 5

Breakfast	*Lunch*	*Dinner*
	Monday, February 24	
Peanut-corn-pone (corn meal, peanuts, and margarine) Molasses Margarine	Vegetable casserole (cow-peas, tomatoes, onions, cabbage, pork) Milk Corn-pone and margarine	Glazed sweet potatoes Slaw, hot vinegar dressing Fried salt pork Corn-pone Margarine
	Tuesday, February 25	
Peanut scrapple (peanuts, corn meal, margarine) Molasses Milk Margarine	Peanut soup (peanuts, milk, corn meal) Beet greens and salt pork skins Cold canned tomatoes Corn-pone Margarine	Cow-peas Boiled onions Cabbage slaw, salt and vinegar Corn-pone Margarine Salted peanuts
	Wednesday, February 26	
Salt pork Milk gravy Peanut scrapple Margarine	Cow-peas Cabbage and onion salad, salt and vinegar Corn-pone Peanut pudding (corn meal, milk, molasses, sugar, peanuts, margarine) Margarine	Baked sweet potatoes Salt pork, floured and fried Creamed peanuts Milk gravy Corn-pone Reheated turnip greens for 4, onions for 2 Margarine

DIET NO. 6

Breakfast	*Lunch*	*Supper*
	Thursday, February 27	
Rolled oats and raisins Evaporated milk and sugar for cereal White bread toast Margarine	Baked potatoes Fried liver Milk gravy Beets Whole wheat muffins Margarine	Lima beans Turnip greens and collards Cornbread Hot stewed dried peaches Margarine Reheated muffins
	Friday, February 28	
Rolled oats Evaporated milk and sugar for cereal Biscuit cinnamon rolls Margarine	Meat loaf Baked potatoes Stewed carrots Whole wheat muffins Margarine	Polenta Stewed turnips Raisin-rice pudding Reheated cinnamon rolls Margarine
	Saturday, March 1	
Rolled oats Evaporated milk and sugar for cereal Whole wheat muffins Margarine	Scalloped tomatoes Hashed brown potatoes Stewed cabbage White bread Skim milk to drink Margarine	Reheated polenta with 1 c. tomatoes Baked beans Stewed turnips Reheated cornbread and muffins Reheated rice pudding Margarine
	Sunday, March 2	
Rice pancakes Sorghum Margarine	Pan sausage Milk gravy Baked potatoes Stewed carrots Biscuits Margarine Peach upside-down cake	Potato and onion soup Cabbage and carrot salad Reheated greens Reheated cabbage Toasted biscuit Peach upside-down cake Margarine

in its various forms which was not in the least distasteful, also hominy which was very good, and beet greens which were not bad but which I would not choose voluntarily if a choice of other dishes were presented. Many of the dishes were those to which I had been accustomed at home; namely, scalloped potatoes, baked potatoes, and meat loaf. It was a good all-round diet and quite sufficient.

Diet No. 3: Although the diet was filling and no unusual sensation of hunger was noticed, there was an element of unpalatability which was not pleasant. Sameness or lack

DIET NO. 7

Breakfast	*Lunch*	*Dinner*
	Tuesday, March 25	
Grapefruit halves	Omelet	Tip-top loaf, browned
Rolled oats cooked in milk	Scalloped potatoes	Milk gravy (browned flour)
Hot milk and sugar for cereal	Raw carrots	Leaf lettuce (home garden. Dressing: salt, sugar, vinegar, milk)
Margarine	Yellow corn meal muffins	Rice cooked in milk
	Margarine	Whole wheat biscuit
	Sorghum	White biscuit cinnamon rolls
		Margarine
		Hot stewed dried apples
	Wednesday, March 26	
Sliced oranges	Yellow corn meal mush made with milk	Stewed beef ribs
Oatmeal muffins	Shredded cabbage, sour gravy dressing	Noodles and potatoes cooked in meat broth
Fried salt pork	Whole wheat bread	Swiss chard
Margarine	Hot whole wheat ginger cake	Hot whole wheat rolls
Hot milk for 2	Margarine	Margarine
	Milk to drink	Raisin-rice pudding
	Thursday, March 27	
Stewed dried apples	Baked sweet potatoes	Pan sausage
Milk toast (whole wheat bread)	Cold canned tomatoes	Milk gravy (browned flour)
Margarine	Radishes	Mashed potatoes
	Green onions for 1	Hot beets
	Sliced raw turnips	Reheated whole wheat rolls
	Whole wheat bread	Margarine
	Margarine	Dried-apple betty with nutmeg sauce
	Angel cake	
	Milk to drink	
	Friday, March 28	
Stewed raisins	Cream of potato soup (left-over scalloped potatoes and onion)	Pot roast
Fried mush (mush made with milk)	Cabbage and carrot salad with hot dressing (salt pork fat and vinegar)	Turnips, potatoes, and onions cooked whole with roast
Margarine	Whole wheat toast	Beet greens
Sorghum	Margarine	Hot white rolls
Hot milk for 2	Reheated ginger cake	Margarine
		Apple sauce and custard
		Angel cake
		Milk to drink
	Saturday, March 29	
Sliced oranges	Boiled Lima beans with salt pork	Dressing with meat
Rolled oats cooked in milk	Hashed brown potatoes	Stewed tomatoes
Hot milk and sugar for cereal	Potato cakes (left-over mashed potatoes)	5-minute cabbage cooked in milk with left-over chard stems
White bread toast	Reheated milk gravy	Green onions for 1
Eggs fried in margarine	Beets and greens	Radishes
Margarine	White and whole wheat bread	White and whole wheat bread
	Margarine	Margarine
	Milk to drink	Sweet potato-raisin casserole
	Choice of reheated left-over desserts: (1) custard; (2) rice puddings; (3) apple betty	Salted peanuts
		Milk to drink
	Sunday, March 30	
Stewed dried apples	Meat loaf	Reheated dressing with meat
Oatmeal pancakes	Milk gravy	Scrambled eggs
Sorghum	Carrots en casserole	Radishes
Margarine	Greens: mustard and radish tops	Green onions for 1
Sausage	Baked potatoes	White bread
Milk gravy	White and whole wheat bread	Margarine
	Margarine	Milk to drink
	Grapefruit sections and sliced orange	Cold dried-apple sauce
	Milk to drink	Salted peanuts

of variety was very noticeable. There was a marked desire for something succulent (fruits and vegetables) as well as for meat.

Diet No. 4: I liked all the food. It was very satisfying. I grew a little tired of corn muffins although they were delicious. Beans were served too many times in two days. Had they been scattered over a longer time I should have enjoyed them more. One meal seemed to have too much food. More oatmeal and less corn meal would have been preferable. And if tomatoes (canned) could have been added once or twice the menus would have suited me a little better. But all in all, there was good variety and the food was well prepared.

Diet No. 5: Following each meal I felt quite satisfied, only after Tuesday dinner did I feel that I had eaten too much. At no time did I get very hungry between meals. The corn-pone became somewhat monotonous. It seems to me had the same amount of meal been cooked as mush and eaten with oleo, it would have been more desirable. The vegetable casserole served on Tuesday was good—also peanut soup, scrapple and pudding. Creamed peanuts were not bad but not too good. Perhaps roasting and then serving with cream sauce would be better. Raw salads were especially welcome. From this diet I learned a variety of uses of peanuts and appreciated more the value of simple foods—sorghum, corn-pone, beet greens—and believe these menus will be most valuable in low-cost diet plans when not served on consecutive days.

Diet No. 6: Foods included in this diet have been very palatable. The menus have been very similar to our daily foods. With meat, milk, and fruit included, I have enjoyed preparing and eating the foods on this diet. Less time than usual was taken in preparing these meals. I have been satisfied and on some days I was too full. Food served attractively increases the appetite. Color schemes were carried out in each meal.

Diet No. 7: The food served on this diet was the most satisfactory of all the diets. The food was varied and the meals contained meat, eggs and fruit in more satisfactory amounts. The only adverse criticism I have is that in order to keep my weight up it was necessary to eat larger amounts of food than I ordinarily eat with resulting discomfort of too great fullness. Had I had whole milk, more nuts, candy, or concentrated foods, I would no doubt have been able to obtain sufficient calories with less bulk. There was not too much roughage in the diet for me. On the whole I would say this diet is quite satisfactory and a pleasure to eat and it approached the type of food to which I am accustomed.

These are the outstanding impressions of the author: first, how much more acceptable the diets were made by the inclusion of even tiny portions of fruits and very small amounts of meats, when the flavor was skilfully stretched; second, the importance of good but simple preparation, and painstaking care in the serving of food; third, the imperativeness of permitting absolutely no waste; fourth, the necessity for careful shopping and the saving which might be effected by home production of some foods. There is no doubt that *really good* low-cost diets are achievable and the way to achievement is teachable. Therein is a great challenge to nutritionists.

Etiology of Diabetic Acidosis

Our data as to the effect of an excessive intake of carbohydrate definitely contradict the belief that it is an etiologic factor in the development of acidosis in the diabetic patient. In no instance among more than 30 patients studied was ketogenesis stimulated by excessive carbohydrate intake; on the contrary, an inhibition of ketogenesis was frequently observed. The only factor that invariably accelerated the production of acetone bodies was the withdrawal of exogenous insulin, and even under these circumstances some subjects showed an inhibition of acetone body production when put on an excessive carbohydrate intake. The observation that the higher the carbohydrate intake the greater the amount retained and, consequently, utilized is of significance in the light of the modern tendency to increase the carbohydrate content of the diets of diabetic patients.

These studies indicated also that the sudden development of an excessive blood sugar level in consequence of an excessive carbohydrate intake does not precipitate or even facilitate acidosis or coma, and from that point of view hyperglycemia is not dangerous. In fact our observations suggest that, once the minimal insulin requirements are established, increasing increments of carbohydrate intake, and the consequent hyperglycemia, result in increasing retention of carbohydrate for oxidation and storage, with a consequent diminution of the production of acetone bodies. It must be emphasized that a distinction should be made between hyperglycemia due to a high carbohydrate intake and that due to endogenous sources. In the former, the high blood sugar merely reflects the character of the diet and indicates that an increased amount of substrate is available for deposition in the liver; in the latter, the hyperglycemia represents a disturbance of regulation of such a degree that formation of dextrose and breakdown of glycogen are accelerated.—*I. A. Mirsky, M.D., J.A.M.A., 118: 691, 1942.*

How One City Tackled the Nutrition Problem[1]

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THE National Nutrition Conference, held last May to consider programs to improve the nutrition and general health of the American people, made every dietitian and nutritionist aware of her obligation to translate the technical knowledge of nutrition into practical terms for the public. The responsibility of devising schemes which would demonstrate correct food habits for health became a real challenge to all of us—for the task is one which must be pursued until intelligent choice becomes routine. All this is a rather large order, for we know that it is not an easy task to improve the food habits of a nation.

In Rochester, New York, a program was already under way in 1941 which was an outgrowth of an appeal from the Extension Service of the U.S. Department of Agriculture through New York State's land-grant college, Cornell University. At their request we had set up a central committee of 8 members and under them 40 subcommittees, each with a specific activity. The central committee consisted of representatives of various organizations concerned with health, as follows: Dr. John R. Murlin, honorary chairman, Department of Vital Economics, University of Rochester Medical School; Constance Hart, chairman, Board of Education, Rochester; Dr. Charles B. F. Gibbs, Rochester (representing the Medical Society of the County of Monroe); Dr. Estelle E. Hawley, Department of Pediatrics, University of Rochester Medical School; Dr. Paul Lembcke, Department of Health, Rochester; Mrs. Dorothy Parker Royle, Monroe County Department of Public Welfare; Mrs. Jessie H. Steitz, Tuberculosis and Health Association, Rochester; Laura Comstock, formerly nutrition adviser, Eastman Kodak Company; and Mr. Howard Bloomfield, promotion manager, *Democrat and Chronicle*, Rochester.

The activities were logically divided into several projects, each under the direction of a subcommittee chairman. The chairmen, in many cases, are members of the Rochester Dietetic Association. An outline of this *planned* program to date, an appreciable part of which is in progress, follows:

The Publicity Committee operates by means of the following:

Newspaper Publicity: A series of articles on nutrition. News articles on various health subjects as opportunity offers. Occasional reference to nutrition program in commercial advertisements.

Speakers' Bureau (to date over 130 talks have been given).

Radio: Half-minute "health pointers" (50 to 60 words). Questions on quiz programs. Items of nutrition interest on "school-of-the-air" programs. Reference, when possible, to interrelationship of health and nutrition on commercial programs.

Exhibits: Demonstrations (using animals) of the relation of diet to health in store windows and other public places such as libraries, stores, gas and electric companies, etc.

The Educational Committee works through the following media:

Health Movies.

Public Schools: Presentation of nutrition information urged in all courses—geography, reading, science, history, etc. Competitive effort encouraged—slogans, posters, plays, essays, etc. Use of health plays for entertainment. Three-minute talks on food and health each week in homeroom periods, and in general assembly if possible. Interschool radio talks on nutrition. Animal feeding experiments.

Commercial Cooking Schools: Use of surplus commodities, recommended diets, etc.

Organizations: Such as P.T.A., A.A.U.W., social and business clubs, churches—one or more meetings during year to be devoted to talks, discussions, demonstrations, etc., of nutrition and health. Study groups organized and help given to such groups by means of speakers, exhibit material and a program for study with a bibliography.

Monroe County Medical Society: Public meetings and presentation of exhibits. Two popular Sunday afternoon lectures this winter have been devoted to the importance of optimal health not only in peacetime, but particularly in wartime. At the first meeting, Grace Carden, Strong Memorial Hospital, set up three well-balanced, attractively served and palatable meals, which constituted a visual demonstration of the means of attaining nutritional adequacy. Speakers, material, and general help to the program as a whole have been supplied.

Hospitals: Exhibits, posters, demonstrations (with emphasis on use of surplus commodities) and practical discussions for patients, especially in the outpatient department, as they await an interview. Animal feeding experiments,

[1] Received for publication March 10, 1942.

with listing of diet or demonstration trays of food in waiting rooms. Posters and exhibits in dining rooms.

Nursing Groups, Dental Workers: Dissemination of nutrition information to patients by means of mimeographed material, leaflets, etc. Local exhibits, demonstrations, and talks in rural districts.

Other Organizations: Such as Y.M.C.A., Y.W.C.A., J.Y.M.A., etc. Posters, exhibits, talks, study groups arranged. Surplus foods incorporated into menus, emphasis on adequate meals, study groups, cooking classes, health program, etc.

Industrial Lunchrooms: Posters, exhibits. Suggestions as to wise choice of foods with well-planned combinations offered at a nominal price to encourage their use.

Public Eating Places: Posters and exhibits when possible. Diet suggestions, food groupings for balanced diet, etc. Educational data on menu.

City Home Bureau: Usual fine program continued with even more emphasis on food and health planned for the coming year.

Civic Exhibit Center: Permanent booth which can be used for dissemination of nutrition material during any exhibit held at center, through posters, movies, animal feeding experiments, demonstrations, etc.

Social Agencies: Distribution of material, also posters, exhibits, etc., at centers. Talks on nutrition to social workers. Study classes to be encouraged.

Specific Courses: Elementary courses in nutrition for the laity, and refresher courses for the trained nutritionist, dentist and physician. To date, approximately 350 persons have been reached through such courses offered by the University, 300 more through the Red Cross, and several hundred through the City Home Bureau study group.

In the fall of 1941, our central committee with the combined efforts of the Rochester Dietetic Association and many helpers staged a "Food for Freedom Parade" in the large Civic Exhibit Center. Light, heat and janitor service were furnished free of charge and the exhibit was offered with no admission fee.

Booths were planned so that persons entering the door passed down an aisle as the story of the attainment of better health through better nutrition unfolded. The content of each booth, likewise the poster material used, was planned by the central committee, therefore the story continued in proper sequence from booth to booth. Only low white picket fences separated the booths so that no break in visual continuity occurred. A large sign over each booth described its display and other details of arrangement were taken care of by the persons responsible for each exhibit, most of whom were members of our subcommittees.

Booth I portrayed on large charts the constituents of the human body. The actual constituents were displayed in small bottles on a table and a tape affixed to each bottle led to the accompanying chart which depicted the function of each constitutent. In the next booth the control of growth by dietary means was illustrated, and the harmful effects of a diet below the requirements. Dietary essentials were emphasized and printed menus showed the difference between correctly balanced diets and those too commonly used. The significance of calories, foods high and low in calorie content, and choice of calories with regard to accompanying protein, minerals and vitamins, were shown in the next division. After this, protein foods were stressed: comparative values of foods as sources of protein, varieties of protein, and proper use of protein foods. Mimeographed sheets of recipes and suggestions were given to those interested. Government bulletins and commerical leaflets were available here and in many other booths.

The next booth, entitled "In Place of Meat," showed many meat "substitutes" such as beans, nuts, peas, and lentils, which, in a palatable form and at a lower cost, can to a certain degree replace meat.

Cereals occupied the next booth which stressed the value of whole grain, wheat germ reinforced, enriched or "Earle Process" wheat and many other cereal products.

In the vegetable booth adjoining, vegetables were classified as 5, 10, 15, and 20 per cent vegetables. The sugar content was illustrated by lumps of sugar, and the vitamin, mineral and caloric value shown. Next to this was a booth with 65 varieties of vegetables on display. All bore numbers and visitors were invited to list them by their correct names. A food basket was presented to the winner of the contest.

Potatoes were given a place by themselves in an effort to refute the common idea that they are a source of calories only. The common white potato, including the special variety for baking, and the sweet potato, as well as dishes prepared with potato as the main constituent, were shown.

A series of booths told the vitamin story with charts showing the effects of deficiency and also the many food sources of the vitamins.

Adequate meals, which served to demonstrate the essentials of the normal diet and methods of adaptation to different age groups, formed the next exhibit. Meals on trays showed what the working girl should eat and what the man in industry needs. Weight control through dietary adjustment was stressed. A physician in attendance weighed, measured and gave practical suggestions to visitors. He emphasized the need for the advice of a physician before undertaking any reducing program.

We had come to feel that no amount of literature we might distribute or pictures we might show to the public could tell the story of good nutrition as well as could a practical demonstration of proper nutrition applied over a period of months, with an average American family as subjects. The next booth, therefore, offered opportunity for a family to be chosen as a typical family (to be known as "The Browns") who would eat, at no expense to themselves, carefully planned, adequate meals for several months. A physician, a nurse, and a social service worker helped in selecting a family from the many who applied. On the last night of the Parade, a family of six, which

included two boys of 3 and 9 years and two girls of 11 and 17, was chosen. Since then a fifth child, a boy, has been born.

With the help of Irene Muntz, of the Rochester Gas and Electric Company, and her assistant, Dorothy Cooper, "Mrs. Brown" has been taught to plan adequate meals at moderate cost, to buy wisely, and to handle household problems satisfactorily. The meals for this family are costing between $15 and $16 a week. Merchants of Rochester have made the project possible by supplying most of the family's food. The menu for the day appears regularly in the *Democrat and Chronicle*. Each Friday the grocery order for the coming week is published. Two articles also appear on the women's page of the paper; one, written by a local clinician, concerns a real or hypothetical medical problem in the "Brown" household and the second discusses in popular style the home problems of the family, such as questions concerning food values and health habits.

To return to the Food Parade, a mobile Army kitchen and several pieces of equipment from Pine Camp and a group of 25 soldiers and officers formed an excellent background for our exhibit. Their Sunday dinner, cooked in the rolling kitchen, demonstrated how nutrition is applied in the Army.

The Red Cross ran a food bar and served whole grain bread sandwiches, milk, fruit juices, and ice cream.

There were fifty-seven booths in all, the titles of which follow: Our Bodies Are Made of Just What Materials?; Growth and Health Can Be Controlled by Diet—Which Child Is Yours?; Counting Your Calories; Protein Foods and What They Do for Us; How Shall I Use My Milk?; Cheese Is an Important Milk Product; Meat—Another Important Protein; Liver! Yes, Liver Deserves a Place by Itself; Eggs—Certainly at Least Four Each Week: Fish—Another Protein and One Which, If Salt Water, Supplies Iodine; Poultry Is Not for Company Alone; "In Place of Meat"; Fats—Chiefly Calories but Also Some Vitamins; Carbohydrates—Fuel for the Body—Calories Again but Also Vitamins, Minerals, Proteins and Bulk; The "Staff of Life"; Vegetables and Fruits Are So Important in the Diet; Potatoes—Good Old "Spuds"—So Many Ways of Serving This Daily Standby; Salads for Health, Teeming with Vitamins and Minerals; The Apple or Better Apples, for Whoever Is Inclined to Stop at One; Vegetables—Meet a Few New Ones; "Sweets" in the Diet—Nature Has Given Us Many Varieties—Use Them as She Intended They Should Be Used.

Vitamin A; The B Group of Vitamins; Vitamin C—and So Pleasant to Take; Vitamin D—the "Sunshine" Vitamin; The Minerals Are Necessary for Good Red Blood, for Strong Bones and Teeth and to Keep the Body "Engine" Running Smoothly; How Shall I Plan My Diet? Mrs. Brown Says "One Menu for All"; Give Your Baby His Birthright—Health!; Food Preparation Is an Art as Well as a Science; Grocery Orders to Fit the Family Budget; "It Pays to Buy Wisely"; "How Can I Budget My Income?; The Man in Industry Upon Whom So Much Depends; What Does the Working Girl Eat?; Weight Control—Are You Too Fat or Too Thin?; Are You Satisfied With Your Health Score?; The "Magic Mirror" Answers Your Health Problems; For That Unexpected Guest; The Surplus Commodities and How to Use Them (3 Booths); The Health Bureau—One of the Guardians of Our Health; The Nurses' Contribution to Health; Brown Family Headquarters; Food Fads; Build Strong Teeth!; The School's Place in the National Defense Program—(1) What the School Lunch Offers Your Child, (2) What Should the Lunchbox Contain? (3) How Can I Get My Child to Eat?; What Tastes Better Than a Meal Outdoors?; Another Set of Initials—V. E. N. D.; The NYA and Its Contribution; "Wishing Well"; Library of Health; Our Military Defense; The Red Cross Canteen.

Daily demonstrations added to the interest of the exhibit. The Rochester Gas and Electric Company showed the preparation of well-balanced, economical meals, at the close of which a chart indicating the essentials of the diet was brought into position behind the table, and ribbons led from the prepared food to the chart to show how food requirements had been met.

In addition, a local meat dealer gave a demonstration of proper meat cutting, 4-H Club members held a pie-baking contest, and each evening a health motion picture was shown, followed by a speaker and, later, music from one of the high school glee clubs. On Sunday an afternoon and an evening speaker were provided, and the Council of Church Women served afternoon tea.

The active working personnel who made all this possible came from many agencies in city and county, home bureaus, professional, business, college and social clubs, fraternal organizations, the Junior League, and Boy and Girl Scouts. These individuals acted as hosts and hostesses, and also served on the different projects for which they chose to be responsible. The response of the just-mentioned groups and the generosity of local merchants, the Board of Education, and the hospitals in providing foodstuffs and materials of all kinds for the exhibit were astounding. The venture was undertaken with only $10 in funds but we were able to reach 41,000 persons in the five days the exhibit was open to the public. We believe that this project accomplished what we had hoped for—an awakening to and a better understanding of the importance of nutrition both in normal times and in times of emergency. Just as our exhibit closed, the Pearl Harbor disaster occurred. Now, our program is literally *pushing* the committee.

The Meulengracht Diet in Treatment of Bleeding Peptic Ulcer[1]

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THE evaluation of dietary treatment in cases of bleeding peptic ulcer is fraught with difficulties. This is due, first of all, to the fact that medical measures other than diet, such as blood transfusions, alkalies, and morphine are used simultaneously. Furthermore, the severity of cases varies in different age groups and in different institutions, being more pronounced in large city hospitals, which serve indigent patients, than in those institutions housing private patients. Another difficulty may be attributed to the fact that in many reported cases the presence of a bleeding peptic ulcer has not been definitely established.

Hemorrhage in peptic ulcer is generally due to erosion of an artery lying at the base of the ulcer. In some cases the stomach itself may be eroded as the result of an associated gastritis (1). If the loss of blood is severe, there is a prompt fall in blood pressure which in itself, if not too great, is advantageous since it helps curtail further bleeding. Clotting of the blood serves to close the opening in the blood vessel. Effectual sealing of the vascular wound is furthered by the retraction of the open end of the artery. It is only after a few days that the clot begins to harden.

It is evident, therefore, that the primary object of treatment is to prevent dislodgment of the clot, which is most apt to occur during the first few days after hemorrhage. It also becomes apparent that an eroded artery, thickened as the result of arteriosclerosis, especially in older individuals, may not be able to retract sufficiently to prevent further bleeding.

It is generally agreed that during hunger the stomach exhibits active contractions (2, 3). Christensen (4) has demonstrated the quieting effect of the administration of food on these contractions. Since it is apparent that active (hunger) contractions may dislodge the clot, the administration of food immediately after hemorrhage in order to quiet these contractions would appear logical. It was this argument as well as the fact "that exhausted patients often died after hemorrhage in spite of scrupulous dieting, that sometimes patients with protracted hemorrhage stopped bleeding when they were given food and that very often ambulant patients recovered from severe melena without making any particular change in their ordinary diet," which led Meulengracht in 1931 to begin the immediate feeding of patients suffering from bleeding peptic ulcer.

Other reasons for such a plan are the observations of Mills and Necheles (5) that a marked shortening of the clotting time occurs during absorption of mixed meals due to the protein fraction of the food, and the observations of Cullinan and Price (6) that patients starved 24 or 48 hours are much more likely to suffer a recurrence of bleeding than patients fed at once. The strongest argument, however, was Meulengracht's report (7) of about a 1.5 per cent mortality in his own cases. In addition, Meulengracht pointed out that the patients made a more rapid recovery from the state of shock, that they were easier to manage and more contented, that they regained their strength more quickly, and that their blood regenerated more rapidly.

The plan of immediately feeding patients with bleeding peptic ulcer is not altogether new. In 1904 Lenhartz (8) reported that for a period of eleven years he had been giving raw eggs and milk to patients with bleeding peptic ulcer soon after the onset of hemorrhage. He permitted minced meat on the sixth day. In 1927 Andresen (9) advocated the immediate feeding of 4 oz. of an aqueous solution containing about 3 per cent gelatin and 10 per cent lactose and orange juice every hour and a half for the first two days after hemorrhage.

Following a visit to Copenhagen in the summer of 1937, we adopted the plan of Professor Meulengracht. To a great extent we have used Witts' (10) modification of the Meulengracht diet which consists

[1] Presented before the American Dietetic Association, St. Louis, October 21, 1941. This work was aided by a grant from Parke, Davis & Company, through the cooperation of Dr. E. A. Sharp.

of withholding meat for the first two days after the hemorrhage. The diet, as we have used it, is listed in tables 1 and 2. It contains about 2500 calories and 50 mg. vitamin C, and is adequate in mineral and salt content. Feedings are given at two-hour intervals, beginning at 8 a.m. and ending at 8 p.m. Between feedings the patient is allowed water or milk in 5-oz. quantities as desired.

After the first day the diet is generally taken quite well. The patients appear less fearful, more calm, and possessed of a better morale than did those on the older type of treatment. They are allowed to get up during the third week, and at the end of five weeks they appear quite normal. The diet is usually continued for a period of six months or more.

TABLE 1

Modified Meulengracht régime

FOODS ALLOWED:	
Vegetable purée	Asparagus, beet, carrot, pea, squash, spinach, potato, tomato
Fruit	Puréed apple, apricot, peach, pear, prune; orange juice
Puddings	Baked custard, cornstarch, rice or tapioca pudding, plain bread pudding, plain Jello, vanilla or chocolate ice cream
Strained cereals	Oatmeal, Cream of Wheat, farina, corn meal, hominy, Wheatena
Bread	White, plain or toasted, with butter; milk toast; toasted, plain white rolls; soda crackers; Graham crackers; vanilla wafers; arrowroot crackers; zwieback
Meats	Scraped beef balls, broiled; minced lamb; minced, broiled, lamb chop; baked or creamed fish; minced liver or chicken
Beverages	Milk, milk and cream, buttermilk, malted milk, tea, cocoa, eggnog

Nausea and vomiting generally cease on the second or third day, although they occasionally persist for a longer period as a result of some complication such as pyloric obstruction or disease of the central nervous system. As a rule, pain is apt to subside immediately after the hemorrhage. In those cases in which it persists, it usually disappears after the second or third day of treatment.

We have used the modified Meulengracht diet in 106 cases of bleeding peptic ulcer admitted to the Cincinnati General Hospital between October 1, 1937 and September 30, 1941. (The diagnosis of peptic ulcer was established in every case either by x-ray examination, gastroscopy, or anatomical study.) Along with the diet, fluids have been freely administered by mouth and in some instances subcutaneously in an attempt to introduce 3500 cc. per day during the first few days of treatment. One or more transfusions usually consisting of 500 cc. blood have been given to 48 of the cases. It has been our intent to discourage the use of morphine because of its tendency to produce vomiting and to substitute some other form of sedative. Nevertheless, in spite of our efforts, 32 of the cases did receive one or more hypodermic injections of this drug. It was also our plan to use alkalies only in the presence of "ulcer pain," yet in some instances they were inadvertently given in the absence of such pain.

Since the adoption of this new form of treatment the mortality rate from bleeding peptic ulcer at the Cincinnati General Hospital has been reduced from

TABLE 2

Modified Meulengracht diet (arranged for two-hour feeding)

TIME OF FEEDING	FOOD	WT. IN GM.
	First and second day	
8 a.m.	Orange juice	30
Breakfast	Toast	20
	Butter	10
	Milk	75
	Cream	75
12 m.	Vegetable purée	60
Dinner	Pudding	100
	Cream	30
	Orange juice	30
4 p.m.	Milk	75
	Cream	75
	Fruit purée	60
	Pudding	100
	Cream	30
6 p.m.	Bread	20
Supper	Butter	10
	Fruit purée	60
	Pudding	100
	Cream	30
	Milk	75
	Cream	75
10 a.m.	Eggnog	
2 p.m.	Milk	150
8 p.m.	Egg (1)	50
	Sugar	5
	Soda cracker (1)	
	Butter	5

Milk and water in volumes up to 5 oz. are allowed between feedings as frequently as patient desires.

TIME OF FEEDING	FOOD	WT. IN GM.
	Third day on	
8 a.m.	Orange juice	30
Breakfast	Strained cereal	90
	Cream	60
	Toast	20
	Butter	10
12 m.	Minced meat	60
Dinner	Mashed potato	100
	Vegetable purée	60
	Toast	20
	Butter	10
	Fruit purée	60
	Milk	90
	Cream	90
	Orange juice	30
4 p.m.	Milk	180
	Chocolate paste	20
6 p.m.	Cottage cheese or minced meat	60
Supper	Bread	20
	Butter	10
	Pudding	100
	Cream	30
	Milk	90
	Cream	90
	Orange juice	30
10 a.m.	Eggnog	
	Egg (1)	50
	Milk	150
	Sugar	5
	Soda Cracker (1)	
	Butter	5
2 p.m.	Eggnog	
8 p.m.	Egg (1)	50
	Milk	150
	Sugar	5

25.6 per cent[2] to 6.6 per cent (representing 7 deaths among the 106 cases, table 3). The average hospital stay of patients prior to the new form of treatment was 32.4 days, whereas that of the group treated by the modified Meulengracht diet was 24.6 days. While we have not had occasion to repeat the careful observations of Schiodt (11) on the more rapid blood regeneration on the Meulengracht régime as contrasted with that resulting from older forms of treatment, we believe that on the whole our observations are confirmatory in this respect. Emery (12), however, has recently been unable to substantiate this.

We admit that the lower mortality rate obtained since October 1, 1937, may be due, in part, to our greater interest in the problem of hematemesis and melena and better medical attention as a result, but we do not believe that this intensified interest suffices to explain the difference. We believe that otherwise the two series of cases lend themselves to fair comparison. The more frequent administration of morphine during the older type of treatment cannot account for the greater mortality, for Kirsner and Palmer (13) have reported a mortality of only 3.4 per cent in patients who received morphine during the course of treatment.

TABLE 3

Mortality in cases of bleeding peptic ulcer (Cincinnati General Hospital)

PERIOD OF ADMISSION	NO. OF CASES	STARVATION AND SIPPY DIET			MEULENGRACHT DIET		
		No. of cases	No. of deaths	Mortality	No. of cases	No. of deaths	Mortality
				per cent			*per cent*
Oct. 1, 1927 to Sept. 30, 1937	79	78*	20	25.6	0	0	0
Oct. 1, 1937 to Sept. 30, 1941	113	1	0	0	106**	7	6.6

* One patient died before dietary treatment could be instituted.

** Of the entire group, 3 patients died before dietary treatment could be instituted, and 3 received the Sippy diet without preliminary starvation.

In this connection it may be of interest to review mortality statistics as found in the literature. It will be seen in table 4 that in a group of 3139 reported cases comprising patients with bleeding peptic ulcer treated with a preliminary starvation period of 24 to 48 hours' duration, there were 343 deaths or a mortality rate of 10.9 per cent. This contrasts sharply with the mortality rate of 3.2 per cent, representing 47 deaths among 1466 patients treated by prompt feeding (table 5). This difference in mortality of about 3 to 1 compares favorably with the figures given by Miller (14) who reports a mortality of 8.7 per cent among 5843 collected cases under the old form of treatment, as compared with a mortality of 3 per cent among 1400 cases treated by prompt and adequate feeding. (Many of the reports reviewed by Miller are included in our tables.)

It appears quite likely that the reduced mortality

[2] This mortality rate is based on all available records (79) of patients with bleeding peptic ulcer admitted to the Cincinnati General Hospital between October 1, 1927 and September 30, 1937. Seventy-eight of these patients were subjected to a preliminary period of starvation for about 48 hours, following which they were given the Sippy diet. We are unable to explain the relatively small number in this series which covers a period of ten years as compared with the larger number of patients seen during the last four years.

following the use of the Meulengracht diet is not altogether due to the character of the diet itself but rather to the fact that it is given immediately after hemorrhage. Kirsner and Palmer (13) report a mortality of 3.4 per cent in 230 patients with bleeding peptic ulcer, most of whom were given the Sippy diet without the preliminary starvation period. Lineberry and Issos (15) reported no mortality in a series of 36 cases in which the formal Sippy régime was begun in the midst of the hemorrhage. Wold-

TABLE 4

Mortality in bleeding peptic ulcer treated with preliminary starvation period (24–48 hours), followed by soft, Sippy, or modified Sippy diet

AUTHOR	YEAR	HOSPITAL	NO. OF CASES	NO. OF DEATHS	MORTALITY
					per cent
Bulmer	1932	General, Birmingham, England	111 (1926–31)	18	16.2
Cullinan and Price	1932	St. Bartholomew's, London	101	15	14.8
Burger and Hartfall	1934	Guy's, London	137	31	22.6
Aitken	1934	London Hospital	234	20	8.5
Christiansen	1934	Kommunehospitalet, Copenhagen	289	23	7.9
Davies and Nevin	1934	St. Thomas's, London	385	79	20.5
Emery and Monroe	1935	Peter Bent Brigham, Boston	384	20	5.2
Goldman	1936	San Francisco Hospital	349	56	15
Hesser	1936	Linköping, Sweden	304	9	3
Hurst and Ryle	1937	Guy's, London	258	14	5.4
Miller and Elsom	1938	University of Pennsylvania	49	3	6.1
Bennett	1938	Middlesex, London	60	4	6.6
Copland	1938	Touro Infirmary, New Orleans	32	7	22.0
Turnbull and Sagi	1939	Evanston Hospital, Evanston, Illinois	80	2	2.5
Crohn and Lerner	1939	Mt. Sinai, N. Y.	216	14	6.5
Chasnoff *et al.*	1940	Beth Israel, N. Y.	72	8	11.1
Schiff	1940	Cincinnati General	78	20	25.6
Total			3139	343	10.9

This table was taken in part from Kirsner and Palmer (13); Chasnoff, J., Leibowitz, S., and Schwartz, R.: Am. J. Digest. Dis. 7:373, 1940; and Miller, T. G., and Elsom, K. A.: M. Clin. North America 22:1711, 1938.

TABLE 5

Mortality in bleeding peptic ulcer treated by prompt feeding

AUTHOR	YEAR	HOSPITAL	NO. OF CASES	NO. OF DEATHS	MORTALITY
					per cent
Gubergrits	1936	University Kiev	15	0	0
Boyd and Schlachman	1938	Metropolitan, N. Y.	15	0	0
Meulengracht	1939	Bispebjerg, Copenhagen	491	10	2
Alder	1939	Kantonsspital, Aarau, Switzerland	40	1	2.5
Clemmesen and Lund	1939	Sundby, Copenhagen	263	10	4
Jones	1939	St. Bartholomew's, London	50	1	2
Andresen and D'Albora	1939	Long Island College and St. Mary's, Brooklyn	173	4	2.3
Turnbull and Sagi	1939	Evanston Hospital, Evanston, Illinois	11	0	0
Crohn and Lerner	1939	Mt. Sinai, N. Y.	23	2	8.6
Chasnoff *et al.*	1940	Beth Israel, N. Y.	21	1	4.7
Scott	1940	Western Infirmary, Glasgow	60	2	3.3
Mayer and Lightbody	1941	Receiving, Detroit	130*	6	4.6
Miller	1941	University of Pennsylvania	32	1	3.1
Emery	1941	Peter Bent Brigham, Boston	36	2	5.5
Schiff	1941	Cincinnati General	106	7	6.6
Total			1466	47	3.2

* This excludes 3 cases of gastric cancer (one fatal) in author's total of 133 cases.

man (16), using a continuous intragastric drip solution of aluminum hydroxide together with two-hour bland feedings, has reported a mortality of only 2.1 per cent among 144 cases. We still prefer to use the more liberal diet as indicated because of its greater content of protein and vitamins and increased palatability, factors which serve to lift the patient's morale and expedite recovery.

CONCLUSIONS

The immediate feeding of Cincinnati General Hospital patients with severe hematemesis and melena due to peptic ulcer, according to a slightly modified plan of Meulengracht together with a liberal use of fluids orally, blood transfusions, alkalies, and iron, has effected a reduction in the hospital stay of patients and a significant reduction in mortality. Our own experience in this respect compares quite favorably with the average experiences reported in the literature, although our own mortality figures are higher than the average figures reported.

ACKNOWLEDGMENTS

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Preventing Nutritional Deficiencies

In perhaps no other group of diseases does prevention offer as great possibility for complete success as do the nutritional deficiencies. Preventive treatment may be taken to mean general prevention, prevention in the population as a whole. As such it is entirely a matter of diet alone, except under certain abnormal conditions as war or famine when supplements of concentrates or pure substances may be included. This general prevention is a matter of economics and education, the availability of adequate food supplies at a proper cost to a population educated to a knowledge of a balanced, adequate dietary. Such prevention is properly a matter for public health agencies and the physician is less concerned with it than with other forms of prevention to be considered later. Nevertheless, the physician must not forget his obligation to the public as a teacher and a leader and in particular to his clientele who look to him for information and guidance on matters of health as well as illness. He should, therefore, be prepared to give sound current advice in matters of diet and nutrition in so far as this is available clinically, keeping abreast of new developments in a critical but progressive manner.—*Youmans, J. B., Nutritional Deficiencies, p. 10. Philadelphia: J. B. Lippincott Company, 1941.*

The Effect of Lemon Juice on Calcium Retention[1]

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SINCE citrus fruits are considered important in the human diet, a problem was undertaken to show the effect of lemon juice upon the utilization of food calcium. The literature revealed no research on the effect of lemon juice *per se* on calcium retention. Lanford (1) reported that when young growing rats were fed 5 cc. frozen Florida (not Valencia) orange juice daily in addition to a diet of 1 part powdered whole milk and 5 parts ground whole wheat, the proportion of calcium stored in the diet, as determined by carcass analysis, was about eight per cent greater than the proportion stored by control animals on the basal diet alone. Chaney and Blunt (2) found that the daily intake of 600 to 700 cc. orange juice increased the calcium retention of two growing girls.

EXPERIMENTAL

Five litter-mate pairs of female rats of the Wistar strain were used. They were reared from rats which had been fed the following stock diet: ground yellow corn 35 per cent, ground whole wheat 30, linseed meal 7, dried skim milk 22, pork livermeal 1, alfalfa meal 4, ground oyster shells 0.5 and sodium chloride 0.5 per cent. At the beginning of the experiment the rats were 28 days old and ranged in weight between 48.0 and 59.1 gm.; the difference in body weight between members of a pair averaged 1.6 gm., the maximum difference being 3.8 gm. The experiment was conducted during April, and the animals were kept in a third-floor room with a south and west exposure. The windows were open most of the day and no buildings were near to obstruct the sunshine.

Basal Diet. The basal diet was the Sherman Diet A (or Diet 16) made in the proportion of 1 part powdered whole milk to 5 parts whole wheat flour. Chemically pure sodium chloride in an amount equal to 2 per cent of the wheat was added. The calcium content of the components of the air-dried diet was determined and found to be 0.166 per cent, which approximated the 0.19–0.20 per cent calcium of the Sherman Diet A (or Diet 16).

Lemon Juice. The lemon juice was extracted from lemons obtained from the subtropical horticulture orchard of the College of Agriculture of the University of California at Los Angeles. The fruit selected were of commercial picking size, that is, No. 6 picking ring or larger. They had started to turn yellow, which was considered a stage of maturity easily determined, and should have given as uniform a sample as it was possible to select. The ten-year-old trees were all of the Eureka variety, the most important commercial variety grown in California. The buds for this lot were all taken from one parent Eureka lemon tree and budded on sweet orange root stock, and were growing in a climatic zone that may be considered comparable to a large part of the commercial lemon acreage in southern California.[2]

The lemons were picked in the spring and allowed to stand in the laboratory 16 days before being reamed. Enough lemon juice for the entire experiment was hand-reamed at one time on a large glass reamer, and strained through a wire sieve into a glass container. An amount slightly in excess of the amount needed for one day's supply for the animals was held frozen in separate sealed amber glass bottles. Each day's supply of the frozen juice was quickly thawed immediately preceding its feeding. Calcium analysis of the juice showed it to be 0.0083 per cent.

Feeding Procedure. The basal diet was kept at all times before the control animals and was placed before the experimental animals during the morning and removed from them in the late afternoon when they were fed the lemon juice supplement mixture. Five cc. lemon juice was pipetted into containers holding 5 to 8 gm. of the basal diet and the mixture stirred with a glass rod to the proper sticky consistency. When the larger quantity of basal diet

[1] Received for publication October 13, 1941.

[2] Information received from E. R. Eggers, College of Agriculture, University of California at Los Angeles.

was incorporated with the lemon juice, 3 to 5 cc. distilled water was added to make it of like consistency. Food of doughy consistency was avoided in order to prevent the rats from picking it up, carrying it about their individual cages and dropping pieces through the mesh to the removable tray below. Usually the rats greedily consumed the lemon juice supplement mixture. The amount left, if any, was very small and the authors decided to add that not eaten to the next night's feeding rather than leaving it before them during the day. Only once during the entire 130 lemon-juice feedings to all experimental animals did a rat refuse to take its daily 5 cc. allotment.

A record was kept of all food given to each animal. Twice a week a fresh paper was placed in the removable tray to collect the main part of the scattered food. Large sheets of black glazed paper placed under the outside of each cage caught any other scattered food. The powdery food and the feces which dropped through the mesh to the removable tray below were separated for each rat. A record was kept of the weight of the scattered food, a necessary procedure in order to know the actual amount of food consumed by each animal.

Food was withheld from the animals 24 hours preceding the 60th day of age, at which time they were weighed and chloroformed. Although the animals had fasted 24 hours, some food remained in the gastro-intestinal tract and had to be removed; if not removed, a large and variable source of error would be introduced because of the unassimilated food which contained calcium. The net body weight was considered as the final live weight, minus the weight of the gastro-intestinal tract and its contents.

Calcium Analysis of Carcass. After the net weight of each 60-day-old animal was determined, it was dissected at the joints, placed in crucibles, dried, charred and finally ashed in an electric muffle furnace until a pure white ash was obtained. The ash, heated to constant weight, was dissolved and analyzed for calcium by the volumetric modification of the McCrudden method. U. S. Bureau of Standard weights, volumetric flasks, and pipettes were used.

Calcium Retained as Per Cent of Calcium Intake. The following explains what is meant by "calcium retained as per cent of calcium intake" in table 1. On analysis, seven 28-day-old rats of the same strain, diet, and environmental conditions were found to have an average of 0.90 per cent calcium in their net body weight. It was assumed that the rats which lived to be 60 days of age had had this same percentage of calcium in their bodies at 28 days of age.

TABLE 1

Effect of lemon juice on the calcium retention of female rats between ages of 28 and 60 days

RAT NO.	BODY WEIGHT		GAIN IN WEIGHT	FOOD MIXTURE CONSUMED	LEMON JUICE CONSUMED	TOTAL CALCIUM INTAKE	60-DAY-OLD		BODY CALCIUM AT 60 DAYS (NET WEIGHT)				
	Initial 28 Days	Final 60 Days					Net Weight†	Ash (Net Weight)	Total Calcium	Per Cent of Ash	Per Cent of Net Weight	Retained	Retained as Per Cent of Calcium Intake
	gm.	*gm.*	*gm.*	*gm*	*cc.*	*gm.*	*gm.*	*gm.*	*gm.*			*gm.*	
1	52.2	115.1	62.9	309		0.5130	104.7	3.4596	0.8848	25.6	0.8453	0.4672	91.07
2*	53.5	114.0	60.5	291	130	0.4939	103.3	3.2599	0.8600	26.4	0.8326	0.4308	87.24
3	50.0	111.9	61.9	285		0.4731	103.0	3.1473	0.8153	25.9	0.7918	0.4176	88.24
4*	48.0	110.0	62.0	266	125	0.4520	98.2	3.0593	0.7770	25.4	0.7912	0.3973	87.90
5	51.0	106.3	55.3	312		0.5180	97.6	3.2917	0.8708	26.5	0.8923	0.4641	89.60
6*	51.0	116.6	65.6	277	130	0.4706	106.6	3.1905	0.8280	26.0	0.7766	0.4213	89.54
7	52.1	130.2	78.1	346		0.5744	120.4	3.5252	0.9513	27.0	0.7902	0.5346	93.07
8*	53.1	130.7	77.6	326	130	0.5520	118.9	3.4454	0.9258	26.9	0.7784	0.5001	90.61
9	55.3	121.2	65.9	335		0.5560	111.6	3.5900	0.9440	26.3	0.8461	0.4986	89.66
10*	59.1	137.5	78.4	345	130	0.5835	126.3	3.6348	0.9390	25.8	0.7435	0.4594	78.72

* Rats fed lemon juice.

† Rat minus digestive tract and contents.

The net body weights of the 60-day-old rats at 28 days of age were calculated as follows: The average weight of the digestive tract and contents of 28-day-old rats was subtracted from the initial live weight of the 28-day-old control and experimental rats; for example, Rat No. 1 had an initial live weight of 52.2 gm. From this figure, the subtraction of 5.8 gm. (average weight of digestive tract and contents of 28-day-old rats) yielded 46.4 gm. or the estimated net weight.

To estimate the amount of calcium in rats at 28 days of age, the net body weight was multiplied by the percentage of calcium found in the animals analyzed at this age, namely, 0.90 per cent of 46.4 gm. or 0.4176 gm.—the estimated calcium for Rat No. 1 at the beginning of the experiment.

In order to determine the amount of calcium retained, the amount of calcium estimated to be contained in the 28-day-old rat was subtracted from

the amount of calcium actually analyzed in the 60-day-old rat. For example, when the entire carcass of Rat No. 1 at 60 days of age was analyzed it was found to contain 0.8848 gm. calcium. This amount, minus the estimated calcium of the 28-day-old rat, namely, 0.4176 gm., yielded 0.4672 gm. or the amount retained during the experimental period.

The food consumed by Rat No. 1 was analyzed and found to contain 0.5130 gm. calcium for the entire experimental period. The percentage of calcium retained during the experiment was then computed by dividing the grams of calcium retained, which for Rat No. 1 was 0.4672 gm., by the grams of calcium consumed, which was 0.5130; this result, when multiplied by 100, yielded 91.07 per cent which represents the "calcium retained as per cent of calcium intake."

RESULTS AND DISCUSSION

The data for each litter-mate are shown in table 1.

The calcium retained as per cent of calcium intake for the control and experimental pairs was respectively: 91.07 and 87.24; 88.24 and 87.90; 89.60 and 89.54; 93.07 and 90.61; and 89.66 and 78.72. With the exception of the last pair, for which there is no apparent explanation, both groups retained about the same amount of calcium.

If we interpret the results in terms of the percentage of calcium in the ash, as shown in table 1, we may assume that lemon juice did not significantly influence the calcium retention of young growing rats.

The citric acid content of lemons is about six times that of orange juice according to Hodgson and Eggers (3) who found the percentage of citric acid in the juice of Eureka lemons obtained from the same orchard mentioned in the present study to be 6.21 per cent. California Valencia orange juice and Washington navel variety also obtained from the same orchard contained 1.05 and 1.04 per cent citric acid, respectively.

Day (4) found that the presence of a 2 per cent citrate mixture (citric acid 19.2 gm., sodium citrate 28.6 gm.) in a basal diet which contained 0.25 per cent calcium and 1.05 per cent phosphorus (designated poor in calcium and rich in phosphorus) was, when fed to rachitic rats, without effect on the total ash and the per cent of ash. The calcium content of the diet was of a similar magnitude as the 0.166 per cent in the present problem, which showed that lemon juice was without effect on the total ash and per cent of ash.

SUMMARY

Ten litter-mate 28-day-old female albino rats were placed on a basal diet composed of 1 part powdered whole milk and 5 parts whole wheat flour and containing 0.166 per cent calcium. The experimental rat of each pair was given 5 cc. lemon juice daily in addition to the basal diet. The lemon juice did not cause an increase or a decrease in the calcium retention of the young growing rats.

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THE JAPANESE AND ILLICIT OPIUM TRAFFIC

Paragraph 15 of a booklet of regulations for Japanese soldiers reads as follows:

> *The use of narcotics is unworthy of a superior race like the Japanese. Only inferior races, races that are decadent, like the Chinese, Europeans and East Indians, are addicted to the use of narcotics. This is why they are destined to become our servants and eventually disappear.*

The role played by the "superior" race in the enslavement of the other races through the use of narcotics is revealed in a statement by the Secretary of the Treasury, Mr. Morgenthau (release to the press, January 26). Commissioner of Narcotics Harry J. Anslinger reported to the secretary that he had abundant proof that Japan had defied international commitments by promoting the opium trade. The Japanese officials had three objectives in their traffic: to gain revenue, to corrupt Western nations and to weaken and enslave the peoples of lands already invaded or marked for invasion. Wherever the Japanese army goes, the drug traffic follows. This illicit commerce in "white" drugs is more than tolerated by the Japanese government. It constitutes an important part of its aggressive policy. The extent of this traffic and the conditions engendered by it are truly appalling. According to our narcotic chief, not less than 90 per cent of all the illicit "white" drugs of the world are of Japanese origin, manufactured in the Japanese concession of Tsientsin, in Dairen or in other cities of Manchuria, Jehol and occupied China, and this always by Japanese or under Japanese supervision.—*Current Comment, J. A. M. A., 118: 735, 1942.*

Food Service in the College Community[1]

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THE word "community" in the subject assigned to me refers to that portion of the college enrollment living in dormitories. At Oklahoma Agricultural and Mechanical College we have five dormitories on the campus, housing some 1750 students. Three of these dormitories are equipped with student dining halls. Our college cafeteria serves the remaining students living in dormitories as well as others who care to eat there. Most of the catering for college functions is also handled by the college cafeteria.

Since students living in the college dormitories are required to take three meals a day in the college foods units, the administrative officials realize it is their responsibility to provide these students with well-balanced, appetizing meals at a minimum cost. With this fundamental principle as a guide, the foods units of the college were organized in 1935 and are functioning today on the same general plan, a brief discussion of which follows.

It was agreed that the students must be furnished well-balanced meals and that the foods units must be operated on a self-supporting, non-profit-making basis. As the units were a part of the student industries of the campus, a minimum of full-time help and a maximum of student help were to be used. In addition, since the units were to be used as laboratories in connection with institution administration, it was decided that they should be so organized as to meet, as nearly as possible, all operating costs; that is, not only food and labor costs but all other operating expenses including rent, replacements, depreciation and sundry items. In short, our foods units would differ from a commercial organization chiefly in one respect: any income which the latter would count as profit, with us would go back into food and labor, and a 5 to 10 per cent emergency reserve would be maintained.

The administrative officers of our college believe that responsibility should be balanced with authority. Therefore the office of the director and business manager of the foods units was made a branch of the college business manager's office. Hence, the purchasing of all supplies, the hiring of all help, and the bookkeeping for the foods units go through this office, which makes it possible for the director to have close control of the financial operation of the units.

These matters agreed upon, the next steps to consider were the types of meals to be served and the prices to be charged. We use the same skeleton menu for each of our units, as follows:

BREAKFAST

Choice of:
  Fruit *or* Fruit Juice
Choice of:
  Cereals with Cream *or*
  Bacon *or* Eggs *or*
  French Toast, etc.
Sweet Roll, Toast, Butter
Choice of Beverage

LUNCH

Choice of:
  Soup *or* Fruit Juice
Choice of:
  Meat *or* Meat Substitute
Choice of:
  2 Vegetables *or*
  1 Vegetable and 1 Salad
Bread and Butter
Dessert and Beverage

DINNER

Choice of:
  Meat *or* Meat Substitute
2 Vegetables
1 Salad
Bread and Butter
Dessert and Beverage
  (On guest night and Sunday dinner a 3-course dinner is served in the dining halls)

At the college cafeteria a choice is permitted within each group. For instance, at lunch the student cannot have both a meat and meat substitute and take no vegetable, but he may have meat or a meat substitute and two vegetables, or one vegetable and one salad and so on. In the dormitory dining halls where breakfast is served cafeteria-style, lunch is served as a plate lunch with the waiter or waitress bringing the served plate to the dining room, and dinner is served semi-formal English style with a host or hostess serving the plates at the table. Here the student is offered a fixed menu without choice for lunch and dinner. The dietitian

[1] Presented before the American Dietetic Association, St. Louis, October 21, 1941.

in charge of each unit writes the menu for her individual unit. Since our dormitory units are large, each dining hall serving from 400 to 550 per meal, we have not felt it feasible to cater to individual tastes.

In the units serving mostly men, it is arranged that each student may have one-half pint milk per meal, if he chooses, and one or two pats of butter. These items are not limited in the women's dormitories, yet the percentage of the food budget spent on dairy products, exclusive of butter, is much lower here than in the men's dormitory.

The actual percentage distribution of our food budget for nine months last year is shown in table 1 which gives average figures for the two units serving principally men and the two units serving women.

TABLE 1

Percentage distribution of food budget, Oklahoma A. and M. College Foods Units, September 1940–May 31, 1941

ITEM	MEN'S	WOMEN'S
	per cent	*per cent*
Dairy Products (exclusive of butter)	26.1	19.7
Fruits and Vegetables	20.5	27.2
Meat, Poultry, Eggs	20.7	23.9
Cereal	13.5	9.6
Fats, Condiments and Miscellaneous	19.1	19.5

One of our greatest difficulties is that many of the women students have poor food habits and will not eat certain important foods, particularly milk and vegetables. The men students are more venturesome with new foods than are the women. Of course, there are reasons for this; the men are usually more hungry, and their energy requirement is higher. Even at the cafeteria the men students will take most any vegetable offered rather than do without a part of their meal, since no substitutions are allowed outside the groups.

This year in an endeavor to meet the high energy requirements of some of the men, we are offering baked beans to anyone who desires more food after he has finished his regular noon meal. At the cafeteria a pan of beans is available from which the student helps himself. All we ask is that he eat all he takes on his plate. At the men's dormitory the beans are put on the tables. So far this plan seems to have worked well and the additional cost has not been great.

Another departure this fall is the inclusion of wheat germ among the foods available at breakfast. A sign appears beside the bowl of wheat germ which reads, "Do you wish some wheat germ for additional vitamin B_1 (thiamin)? One to two tablespoons is an average serving." The dietitian or attendant at the counter tells those interested how it may be used with other foods.

The college foods units, fundamentally, are service units for the college as a whole and when they cease to fulfil this purpose they lose their main reason for existing. Furthermore, those who are in immediate charge of the college food services realize that unless the administration and faculty understand the aims and ideals as well as some of the problems of those in charge of the food service, and extend their cooperation and support, it is impossible for the foods units to function as they should in the college community.

At Oklahoma Agricultural and Mechanical College the fact that the director and business manager of foods units has academic and administrative rank in addition, has facilitated our work. Also, many of the students appreciate the fact that there are two graduate dietitians in immediate charge of each foods unit. A central student employment office, too, with which we work harmoniously, is a decided help. Our students work three hours a day for three meals. Except for the engineers who carry 15 hours, they are not permitted to carry more than 14 hours' academic work unless they have approximately a "B" grade point average. If they make a single "F", they are automatically dropped from the foods units list. All these considerations lend dignity to the work.

In order that the dormitory life may be more interesting and homelike for the resident students, we feature special holidays during the year. Students taking their meals in the dormitory dining halls are allowed one free guest ticket each month. Those who are on limited funds thus have an opportunity to invite guests for meals and are able to meet social obligations which otherwise might be difficult. This has done much to acquaint the faculty and others with our standards in the college dining halls, and we have found the plan to be a good leavening influence.

Besides the regular functions detailed above the college cafeteria does a large catering business. Practically every type of service is handled in the three extra dining rooms which adjoin the main cafeteria room. We have adhered to the policy that the dormitory dining halls exist primarily for the students living in the halls, and that when it is necessary to schedule special functions in these dining halls, the students are always served their regular meal at the regular time. As soon as the students leave the room, tables are re-set and the special group is served. This principle, while difficult to establish, is now clearly understood.

Most gratifying of all, perhaps, in connection with my work with the college foods units for the past six years, is the great improvement in food service standards on the campus, in town, and in many instances throughout the state, traceable in part at least to the training students have received in connection with our dormitory system. By no means do we feel that our job is done, but we have made a beginning.

Editorial

THE LONG VIEW OF PROFESSIONAL EDUCATION

Now that the immediate need is the order of the day, it may seem untimely to suggest that we look askance at short-cuts in education for a profession. With technical skills in the forefront of our needs and, therefore, of our attention, it will appear the acme of obstinacy to some if we continue to insist that a dietitian needs more than technical skill. It takes five years, now, from college entrance to job entrance. Why not cut that down to three? Why not cut the chemistry requirement in half, and omit languages and literature, history and other social sciences? Why bother with a scientific and cultural background for dietitians? *This* is war!

Yes, this *is* war, and technicians may not need a scientific background to perform the routines assigned to them. Many of the things a dietitian does could be done by a technician; but that is not all, for we owe the world far more than the routine performance of set tasks.

This is a war between peoples with differing ideas of the desirable way of life, in which we, the free peoples, are defending the right of the individual to choose his way of thought and speech and action. Success of the democratic way of life depends on the direction of such choice, and that to a large extent depends on the quality of the national leadership. To the professionally educated belongs leadership in their respective fields. *Noblesse oblige*. Opportunity begets obligation. Especially will this be true in that difficult period to come, that time already spoken of as "after-the-war," when the path we choose must perforce lead toward a better world. It will be hard to choose that path, for at that point there will be many unmarked forks in the road. This is the time to learn how.

People who think for themselves need three concepts quite foreign to dictatorships—a scientific concept, a social concept, and an aesthetic concept.

If we are to recognize magic as the stock-in-trade of charlatans, and are to be able to weigh evidence impartially, and to select the true from the false; if we are to have a respect for the absolute in honesty and the nearest possible approach to the absolute in accuracy; if we are to learn to think objectively, a scientific laboratory is a good developing medium for us. Because nutrition has its roots in chemistry and biology, these are the sciences we are likely to choose. This is merely a matter of convenience, offering, as it does, the opportunity to glean pertinent subject matter along with scientific method. A word of warning—Science is shy, and she yields the best of her friendship only on long acquaintance. Elementary courses are not enough.

In the new world in which we hope to live, the subject matter with which we shall deal will be in the fields of social as well as natural science. To be citizens of the world, we must understand the world and the people in it. History gives clues, and so do psychology and sociology, economics and political science. We are going to need a sense of social direction and relationships which can only be based on these social sciences. Certainly they must be given an increased share of our attention.

Understanding of the natural world and the human world around us, important as they are, will not, however, be enough, unless we have beauty too. We need the poetry of words, the poetry of music, and the poetry of color and form and motion, to help us to that calm poise which may be our strongest bulwark against the battering of the time to come. For this, an arts education!

All this will differentiate the dietitian who takes her place buoyantly in the ranks of the professions, from one who is merely a technician disappointed in the dullness of routine. A broad education should make a broad outlook, which is needed now more than ever before.

Growth of this sort is quite as important for the dietitian in service as for the undergraduate. She will protest that she has no time, that the demands on her are so great she cannot do more. She must find time, perhaps by checking over her program and eliminating non-essentials, to which most of us cling. A reservoir which is constantly tapped and never refilled ultimately goes dry and is of no further use. To those who would meet the test, the crucible of human endeavor, the way is hard, yet sharply defined.

A REALIST LOOKS AT THE NUTRITION PROGRAM

In a discussion of papers presented at a special section on Methods of Nutrition Teaching before the American Dietetic Association at St. Louis, Dr. W. W. Bauer, director, Bureau of Health Education, American Medical Association, agreed with the nutritionist that a plan for health education, specifically nutrition education, should not be based on the emergency but should, for greatest effectiveness, be a long-time project. He also agreed that the plan, while obviously desirable, presents certain difficulties and that, in this connection, he was reminded of the verse:

'Twixt optimist and pessimist
The difference is droll.
The optimist the doughnut sees
The pessimist the hole.

This he paraphrased from the viewpoint of the realist, as follows:

'Twixt optimist and pessimist
I'll play a middle role.
I love to see the doughnut
But I don't forget the hole.

Nutritionists, he warned, should remember that the American people are prone to temporary enthusiasms—last year it was syphilis; this year it is nutrition; next year what will it be? And it is doubtful whether any plan for nutrition education, or anything else, can remain unaffected by the outcome of the current conflict.

If nutrition education or any other community project is to succeed, there must be widespread participation by all, in Dr. Bauer's opinion. Too many people are willing "to let George do it. We see it in local communities turning to the state and the federal government for the solution of problems which they have not even tackled themselves and in our organizations we see the members who have contributed nothing criticizing the officers for not doing better."

Food must be emphasized rather than nutrition, according to Dr. Bauer, since most persons to whom the program is directed think in terms of meals and the foods of which they consist. Mere information, too, is no basis for action unless there is first motivation. Information, which is the "last thing most people think they need," must therefore be conveyed as interestingly as possible. A high school boy, for instance, was having trouble with one of his studies and asked the editors of *Hygeia* to outline a diet which would help him to improve his knowledge of mathematics. Thus the boy had a motivation in seeking information. The reply he received, which could have been a prosaic lecture on diet, was, instead, in the form of a mathematical formula for diet, namely: "A multiplication of all kinds of good food divided into three square meals a day, plus plenty of milk to drink and minus any idea that any diet could contribute to a special knowledge of anything." Dr. Bauer averred that Oliver Wendell Holmes had summed up well this matter of informing the layman when he said: "The patient is no more entitled to all the doctor's knowledge than he is to all the medicine in his saddlebags."

On the subject of the inevitability of permitting community programs to fall into the hands of those "who lead because they have to lead," Dr. Bauer observed that if we cannot keep these perennial leaders out of leadership, and since, as one health officer remarked, "It is illegal to shoot them," perhaps the best solution is to influence their leadership without letting them know that they are being influenced. Lest we take ourselves too seriously, he sagely suggested: "I would like to emphasize one point about nutrition education and that is, let us not be solemn. Let us not make nutrition a grim topic. Let us remember the dietary wisdom of one who was no nutritionist but a masterful student of people. His name was William Shakespeare and he said: 'Let good digestion wait on appetite and health on both.' "

MORE DIETITIANS NEEDED FOR ARMY SERVICE

With the rapid expansion of the armed forces there is a growing demand for dietitians in Army hospitals. According to a communication from the Office of the Surgeon General, under date of April 10, "There are approximately 325 dietitians now on duty in Army hospitals, and about 400 more will be required." It is urged, therefore, that all dietitians with hospital training and recent hospital experience write to the Placement Bureau, American Dietetic Association, 185 North Wabash Avenue, Chicago, giving in typewritten form: (1) Name. (2) Address. (3) Whether enrolled with Red Cross. (4) Civil Service rating, if any. (5) Whether willing to accept foreign service. (6) If willing to serve in station hospital in this country, state preferred location. Also, if not already registered in the Placement Bureau of the Association, a complete outline of training and experience should be given together with references.

Over 350 dietitians served in Army hospitals and cantonments in the first World War, 84 of whom were in service overseas.

All those who meet the requirements for Army duty today should not hesitate to sign up. Dietitians, too, who may have retired professionally, should immediately take advantage of refresher courses which will fit them to replace temporarily the younger members in the service of their country.

Let us see that the good record of the dietitian for war service to her country in 1917–19 is upheld.

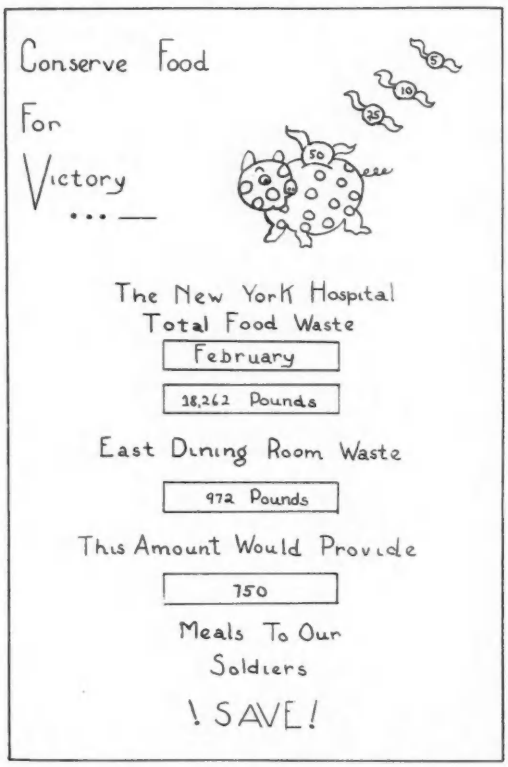
Current Comment

WAR ON WASTE

JEANETTE TALMADGE

During recent months the Nutrition Department of the New York Hospital has been carrying on a campaign against food waste in each of its cafeterias. Striking posters in red, white, and blue, appealing to the patriotism of the patrons, are used to emphasize the need to conserve foods.

These posters show the statistics on edible food waste taken from the hospital monthly waste report.



The total poundage of this food waste in the hospital, and in the particular cafeteria in which each poster is displayed, is charted.

To give a clearer concept of the meaning of this waste, a timely comparison is made on each poster, showing the amount of edible waste by weight in terms of the number of soldiers' meals it represents. The charts are so made that new statistics can be inserted. These changes in figures sustain interest from month to month, since the observers are alert to note any improvement.

This plan is a simple idea in itself but the charts have occasioned much amazement and stimulated much discussion.

Note: The drawing of the pig bank in the above chart is reproduced from *America's Nutrition Primer*, page 56, with the permission of the author.

THAT ELUSIVE NUTRITIVE VALUE

NATALIE K. FITCH[1]

The effect of cooking processes upon the composition of foods has long been a subject of interest in the study of nutrition. Early investigations in this field were concerned with the effect of such processes upon the caloric value and protein and mineral content of vegetables. Denton[2], in 1919, summarized many of these studies and presented data obtained from an extensive investigation which she had conducted concerning the effect of household methods of cooking vegetables upon their nutritive value. She found that vegetables lost from 15 to 60 per cent of their fuel value, depending upon the cooking method employed, and that the nitrogen and mineral losses tended to parallel the calorie losses.

As a result, Denton recommended certain practices to be followed in the cooking of vegetables in order to retain the maximum amount of original food value. Among these are: Cut vegetables in large rather than small pieces unless the amount of water is so small that it will be absorbed during the cooking process. When steaming vegetables, take care that the condensed steam does not drip through the vegetables only to be wasted. Bake or boil vegetables in their jackets when practicable. Do not pre-soak them and use as little water and cook as short a time as possible. Conserve and use all cooking water.

Today all of these "rules" are valid as regards losses of any soluble constituents of the vegetables, including certain of the vitamins. Although in 1919 our knowledge of the vitamins was relatively meager, such progress has since been made in this respect that today our interest in what happens to the vitamins during the cooking process is apt to make us forget that other elements may also be sacrificed. Losses in the calorie value of vegetables or of soluble proteins during cooking are probably not of serious concern from the point of view of practical dietetics. But if soluble carbohydrates—sucrose and reducing sugars—are leached out from

[1] Assistant Professor, Household Arts and Sciences, Teachers College, Columbia University, New York.

[2] DENTON: J. Home Econ. 11: 143, 1919.

the vegetables, much of their desirable sweet flavor is lost. On the other hand, losses of soluble minerals from vegetables deprive them of one of their most valuable dietary contributions.

These facts should be kept in mind throughout the remainder of this discussion which, because of space limitations, must be confined to the relation of cookery processes to the vitamins in vegetables.

Thiamin, ascorbic acid and riboflavin are the three vitamins to which greatest consideration must be given since the others on which sufficient data are available apparently are not significantly affected by any cooking process. A reduction in the vitamin content of vegetables may be brought about during the cooking process by heat destruction of the vitamin or through solution in the cooking water. In many cooking processes both types of losses operate, and while the former represents a total loss of the vitamin, the latter need not be serious if measures are taken to utilize the cooking water. Thiamin and ascorbic acid are heat-labile, the rate of destruction being affected by the degree of heat, the duration of the heating period, and the hydrogen ion concentration of the medium in which they are heated. An increase in either temperature or in the time of heating, with the other two factors remaining constant, accelerates the rate of heat destruction. With temperature and time of heating held constant, a decrease in hydrogen ion concentration increases the rate of destruction to a marked degree, as when baking soda is added to the cooking water in order to retain the color of green vegetables, a practice still far too prevalent. Modern directions for vegetable cookery recommend shorter cooking periods than formerly, and this is an effective means of retaining color and preventing at the same time undue destruction of the chlorophyll of the plant tissue. The detrimental effect of the soda is shown by Aughey and Daniel[3], who found that its addition to the cooking water increased the destruction of thiamin in peas from 9 to 22 per cent, and in snap beans from 18 to 60 per cent. Sherman, La Mer and Campbell[4,5] had previously demonstrated the relationship of time and temperature in heating tomato juice at various levels of hydrogen ion concentration to the rate of destruction of the ascorbic acid present.

The reaction of the medium also affects riboflavin since, although it is relatively stable to heat, Roscoe[6] found it to be destroyed to an appreciable extent in an alkaline solution at temperatures above 212°F. Conditions such as this, however, are not apt to be encountered in cooking processes.

[3] AUGHEY AND DANIEL: Nutrition 19: 285, 1940.

[4] SHERMAN, LA MER, AND CAMPBELL: Proc. National Academy of Science 7: 279, 1921.

[5] SHERMAN, LA MER, AND CAMPBELL: J. Am. Chem. Soc. 44: 165, 1922.

[6] ROSCOE: Biochem. J. 27: 1540, 1933.

Oxidation plays an important role in the destruction of ascorbic acid, and in some plant tissues the enzyme, ascorbic acid oxidase, catalyzes the oxidation reaction. Although the activity of this enzyme is retarded by cold, its effect is significant at room temperature and becomes more marked at higher temperatures until it is destroyed at 212°F. Shredded vegetables and cut-up fruit, in which the plant tissues are damaged, give a favorable environment for the action of the oxidase, as do those cooking processes in which the temperature of the vegetable is not brought quickly to 212°F. This last condition is apt to exist to a greater extent during steaming rather than boiling. Fenton[7] and coworkers report a 14 per cent destruction of the vitamin when carrots were cooked in water for 15 minutes (13 minutes at 212°F.). These investigators attribute the relatively small difference in percentage of loss in steaming to the fact that the carrots were so thinly sliced that there was rapid heat penetration and thus an early inactivation of the ascorbic acid oxidase. It is possible that the pressure saucepan which is being so widely used today may present conditions favorable to retention of ascorbic acid due to the fact that much of the air surrounding the vegetable is expelled and the increase in temperature is rapid. At present, data on this method of cooking are not extensive.

Thiamin and ascorbic acid are not only affected by heat but are more liable to be lost through solution in the cooking water than are the other vitamins. Riboflavin is also water-soluble but since it exists in plant tissues in a combined form it does not dissolve into the cooking water so readily. The extent of the losses of thiamin and ascorbic acid due to solubility varies widely, even for the same variety of vegetable, due probably to differences in the amount of vitamin originally present and in the conditions of treatment. Losses up to 50 per cent and over have been reported for these two vitamins when vegetables are boiled in a large amount of water, and therefore it is recommended that, when possible, small amounts of water be used and that any remaining after cooking be served with the vegetable, made into a sauce or added to soup stock. It is also recommended that the cooking time be short. Steaming has been found to reduce losses of the soluble vitamins, and negligible losses have been reported for potatoes boiled in their jackets or baked.

In summary, the following practices in the cookery of vegetables are recommended in order to retain the maximum amount of original food value:

1. When serving raw shredded or cut vegetables (or fruit), prepare just before serving, otherwise hold in the refrigerator.

[7] FENTON, TRESSLER, CAMP, AND KING: Food Research 3: 403, 1938.

2. Avoid reducing the acidity of vegetables by the addition of baking soda to the cooking water.
3. Cook the vegetable in large pieces unless the amount of water used and the time of cooking can be greatly reduced by cutting vegetables in small pieces.
4. Bake, steam or boil vegetables in their jackets.
5. Do not pre-soak vegetables except when necessary to freshen, in which case do not cut or peel before soaking.
6. Use small amount of water.
7. Use boiling water in starting the cooking and bring contents of saucepan to the boiling point again as quickly as possible.
8. Cook no longer than necessary for a satisfactory degree of doneness.
9. Serve the vegetable immediately.

In conclusion, it should be emphasized that color and flavor accent the gustatory appeal of vegetables. Therefore it may occasionally be feasible to select a method of cooking a vegetable which conserves color and flavor at the expense of a relatively greater loss of nutrients than that occasioned by more conservative methods of cooking. It is possible ordinarily to compensate for such losses in the usual dietary, but in low-cost dietaries serious consideration must be given at all times to the maximum conservation of foodstuffs, and therefore any sacrifice of food value should be avoided.

MODERN EMPHASIS ON PERSONNEL TRAINING[1]

ALBERTA M. MACFARLANE

The value of employee training has been recognized by trade associations and certain industries all over the country—manufacturing, wholesaling, retailing, financing and servicing. Such training, in effect, means learning how to do a job intelligently.

In view of the rising costs of food, labor, equipment, and supplies, the food operator or manager, now more than ever, needs better-trained and more efficient workers and consequently, more effective training programs. Many food departments conduct training courses within the unit and these will always be of value, but executives are becoming generally aware of the fact that if the standards of the food worker in general are to be raised, much of this schooling or training must also be given in organized and generally recognized classes, participation in which is made economically and socially desirable.

Vocational courses for many groups of employees are available through the Smith-Hughes and the George-Deen Acts of Congress, and federal grants supplemented by state and local government funds are used to defray the expenses of such training. But in order that a state or local association may receive such an appropriation, definite standards must be met.

Basic requirements of such courses are that they shall be free to the trainees, and assist in furthering the development of persons already employed. Since the students are employed, the training is carried on after working hours, very often in evening classes. The minimum age is sixteen years and the subject matter taught, of course, must be suited to the type of student. The classes are generally held in a public building and the teachers must be approved by the state and federal authorities.

This type of course offers an excellent opportunity, for the employees are taught to do the work in which they are interested, efficiently and with all the advantages science may contribute, while they are employed. They can, if they will, develop judgment, confidence, knowledge, attitudes and skills necessary to render better service; and with courses appropriate to the different levels of occupation within their reach, they will have the opportunity to fit themselves for better jobs. Such employees need no longer be confined to the lower strata of occupation, for if they show application, adaptability, and interest, the entire food service field, by means of such training, is open to them.

I am sure there are many food service directors who have often wished that deserving workers in their employ could have just such an opportunity. As this training develops the interest, cooperation and intelligent application of the employees, the food units within which they work should benefit through a reduction in food and labor costs and other operating expenses. Such training, too, could conceivably have a far-reaching effect upon the stabilizing of employment. Furthermore, employee training raises the standards of the various jobs within the food industry.

A year ago a National Restaurant Association questionnaire asked, "In what subject or subjects do your employees need added training?" The answers included every subject related to a food operation. The association, through state and local restaurant associations, is now sponsoring vocational training classes all over the country. If these courses are to be of the greatest value to the employee, he must learn not only the craft with its correct procedures, but also allied subjects. For instance, in training waitresses, not only are the rudiments of service with correct procedures taught, but also English, arithmetic, cosmetology, posture, physical exercise, personal hygiene, salesmanship, and above all, human relations.

Probably one of the most effective ways of teaching human relations to food service employees—whether supervisors, cooks, dishwashers or salespeople—is through dramatization. This can be done in employee meetings where the employees themselves become the actors. At a restaurant

[1] This and the paper by S. Margaret Gillam which follows were presented at the Training of Personnel Workshop, American Dietetic Association, St. Louis, October 23, 1941.

management short course at Northwestern University, two employees of the Maramor Restaurant, Columbus, Ohio, dramatized several playlets on employee relations, concerned with common, everyday problems. So impressed was the class with this method of teaching that I believe everyone who attended will recall, when dealing with his or her own employee problems, the performance of John, the dishwasher, and Luella, the cook. May the day soon come when this dramatization of human relations will be a part of every college curriculum! All employee teaching must have direct relation to the job if it is to be vital and of interest.

To assist the teacher in the vocational training classes for restaurant employees, the National Restaurant Association is preparing textbooks in conjunction with the U. S. Office of Education. The first of the series, "Training Sales Personnel," includes a section on "Selling Restaurant Service" covering the following topics: getting a job in a restaurant; training for the job; getting along on the job; analyzing the job; establishing good habits of work; knowing about the food; helping advertise the business; gaining the good-will of the customer; selling food in the restaurant; serving the customer; and maintaining good business relationships. The manual in tentative form was sent to every member of the National Restaurant Association to read, use and criticize, so that all methods and techniques would be alive, dynamic and proved. At the end of six months, the manual was to be revised and illustrated and printed in permanent form.

PERSONNEL MANAGEMENT AND TRAINING

S. MARGARET GILLAM

Staff members of the Nutrition Department of the New York Hospital, in order to cope with the present problem of employment, studied employment methods and conditions in that area. As a result, a more centralized and intensive program of training for the inexperienced workers who are coming into the field of hospital employment was planned.

The centralization of employment has proved to be not only time-saving and effort-saving, but generally more efficient. Instead of each dietitian interviewing prospective employees for her own unit, the interviewing and hiring is done by one person for all of the units in the Nutrition Department. This naturally saves the time and effort of the individual dietitian and permits her to devote more time to the management of her unit. In addition, since one person is made responsible and thus must be informed concerning all openings in the entire department, as well as the backgrounds and experiences of the available applicants, it is possible to select the employee most suitable for a given position. Also, employees who are dissatisfied with their jobs may be transferred to other work for which they are better fitted, as openings occur in other units of the department. Employees who might otherwise leave the hospital may thus be "salvaged" by transfers to other positions in the same department.

In conjunction with the above change in employment technique we are beginning, in an organized way, the training of kitchen and pantry workers and waitresses individually and in groups. Manuals of work have been prepared for waitresses and pantry maids and these will eventually be available for bus-boys, dishwashers, and counter girls. Classes and discussion meetings are important in training waitresses and pantry maids and present an excellent opportunity to emphasize and re-emphasize methods of work and attitudes.

This centralization of employment assures that important steps in the initial instruction of the new employee are not forgotten, and sufficient time can be allotted in which to explain the rules and regulations of the institution and just where the new employee is to fit into this complex organization.

This study of employment and personnel training has made us realize how very important such centralization is to the satisfactory functioning of the food service. We are attempting to perfect our methods in order that we may more quickly transform the many new and inexperienced employees, now entering our ranks, into interested, trained workers.

TRAINING THE HOSPITAL WAITRESS

NELDA ROSS, FAY BURNETT AND GRACE FENNER[1]

The dining room service at Presbyterian Hospital has two primary purposes: good service to the guests, doctors, nurses, social workers, dietitians and other members of the hospital staff; and the development of pride of accomplishment in the employees. The service can be worthy of pride only if the employee is well trained. In turn, the employee can be proud of service to the guest only if he has been well trained. When the present training program was initiated a dietitian was in charge of the dining rooms with a trained hostess as her assistant. At present, however, the dining rooms are supervised by a hostess and two assistants, all trained and experienced in hotel and restaurant service.

Presbyterian Hospital has several dining rooms with different problems. Harkness Pavilion Restaurant is a small unit which caters to guests and relatives of private patients. Room service trays

[1] Miss Ross is Director, Department of Nutrition, Presbyterian Hospital, and President, American Dietetic Association; Miss Burnett, formerly Dietitian, Presbyterian Hospital, is now with Glass Containers Association, New York City; and Miss Fenner is Supervising Hostess of Dining Rooms, Presbyterian Hospital.

are served by the waitresses in this dining room. An à la carte menu with a wide selection of foods is available to the guests and the silver service is used in this dining room.

The Attending Doctors' Dining Room is open only for the mid-day meal, and only a limited number of items is on the menu. The orders are taken by waitresses and checks for amount purchased are given to the guests who pay the cashier at the door. Tray service is used in this dining room, that is, all food is served directly to the table from the waitress's tray. After the food is served, the waitress removes any soiled dishes from the table, placing them on the tray which she holds. Thus, as she returns to the pantry to fill orders, she leaves a tray of these stacked dishes on the soiled-dish counter from which they are sent by dumb-waiter to the dishwashing room.

The dining rooms for interns, nurses, dietitians, social service workers, and other staff members have the same type of service—cafeteria at breakfast and waitress at luncheon and dinner. The waitress recites the menu, takes the verbal order of the guest and collects the food and beverages on a tray from the counter. She serves the guests from her tray which she has placed on the side-stand. Soiled dishes are carried by the waitress to the side-stand, and stacked in a uniform manner on the trays which are carried to the dishwashing room by bus-boys. No dishes are scraped in the dining room, no paper napkins pushed in glasses, and no fluids poured together in glasses.

Before considering the training of the employee, one must begin with her selection. After a preliminary interview in the Personnel Department, the applicant is interviewed by the hostess who determines whether her personality and appearance are suitable. If the applicant is considered satisfactory, the hours of work and duties are explained. Most of the women employed have had no previous waitress experience. It is often less difficult, however, to teach the routine and standard of service to an inexperienced waitress than to re-educate one who has been taught conflicting routines. The applicant, if accepted, is sent to the Personnel Medical Department where she undergoes the thorough physical examination required for food handlers. "Special emphasis is placed on the presence of contagious diseases; the presence of venereal diseases in their communicable stages, the presence of tuberculosis, and personal cleanliness. An x-ray of the lungs is required, a blood Kline test, urine examination, stool culture for organisms of the typhoid, paratyphoid, and dysentery group, and stool examinations for ova and parasites. Other studies are done if the individual case warrants it[2]."

[2] M. J. LEPORE: The Medical Supervision of Hospital Food Handlers, J. Am. Dietet. A., March 1941.

After the applicant has passed her medical examination she is given a uniform. Personal neatness and order are assets to a successful waitress and every effort is made to encourage these. Inspection of personal appearance is made before each meal by the hostess, who also inspects the hands of the waitress as the latter recites the day's menu. Fresh headbands, aprons, collars and cuffs, daily, encourage a neat appearance even though the number of uniforms allowed per week is limited. Lectures on posture and pictorial posters have been employed to remind the young women of the importance of poise and posture. Voluntary weekly meetings in the hospital gymnasium have interested some in light exercise.

Manuals have been compiled for waitresses, bus-boys, and dishwashers, and are given to each employee. There is little reason for misunderstanding duties when they are clearly outlined in manual form.

To obtain good service with a minimum of supervision there must be uniformity in all details of table setting, serving, and clearing. Each new waitress is first taught the placing of dishes and silver for the individual cover and for the entire table which seats four people. Her first duties are to clear the table after the guest has left and to stack the dishes correctly on the side-stand. This uniform stacking of dishes is important in decreasing breakage as the bus-boys carry the dishes to the dishwashing room. It is also important in the organization of the dishwashing room since the bus-boys unload their trays at the proper stations: *i.e.* glasses to glass machine, dishes to soiled-dish table where they are scraped, silver to dishwashing basket, and paper to trash-can. This unloading by the bus-boys permits a systematic routine and saves many waste motions.

To return to the new waitress. After she has learned to clear an unoccupied table and stack the dishes correctly, she is permitted to clear tables still in use. She is then taught resetting a vacant table and gradually learns to reset those occupied by guests. The waitress is then ready to serve. She usually follows a station with an experienced girl, serves desserts, beverages, salads, and bread to the entire table of four and takes the orders of one or two guests. During this period she also learns to give orders correctly at the counter and to collect the food in proper sequence. Gradually she serves the whole meal to one guest and soon to a whole table. It usually requires from three days to a week to teach these procedures to the beginner. The average waitress is expected to serve one station (14 to 16 seats), with occasional assistance, by the end of a week.

One device designed to facilitate service consists of red tickets placed upon certain tables which are to be occupied first. There are two advantages in

this: guests do not seat themselves at tables which require entire or partial clearing before service can be given to the guests; and the guests are properly proportioned among the waitresses so that one waitress does not have all her tables filled while another has but one or two guests to serve.

A meeting is held daily for all waitresses. Any unfamiliar food on the menu is described by the hostess. Demonstrations of correct service of all or certain parts of the menu are given by the waitresses, and various problems of service discussed. The hostess may review the correct method of changing the tablecloth with or without changing the silence cloth, the service of special foods or service under specific situations. Demonstrations are of most value when there are many new employees in attendance. A favorite session is that which illustrates "What is wrong with this picture?" in which a waitress makes intentional mistakes either in service, speech, or attitude, and the rest of the group correct her. When there are few newcomers in attendance, the meetings may consist of informal talks on normal nutrition, simple modified diets (since a few special diets are served in the dining room), the history of the hospital, and so on. That the waitresses appreciate their training may be illustrated by the remarks of one who had gone out to dinner to observe service with a friend, also a waitress here. Her comments were somewhat as follows: "That waitress made many mistakes, she reached in front of us, she put her thumb on the plate and lifted the glasses by the tops. We don't give that kind of service in our hospital."

TRAINING THE PANTRY MAID

SARALOU PETERSON

In these days when jobs are many and workers scarce, we must focus our attention even more carefully on the unskilled members of our organizations whose training and stability within the group depend almost entirely on the efforts of their employers. Pantry maids belong to this classification, being an integral part of the hospital organization. Competent performance of their jobs is necessary for the success of the whole food service.

Although interrelated and interdependent, the criteria of success may be listed as follows: (1) volume and quality of work accomplished, (2) number of complaints by both patients and maids, and (3) the stability of group membership, or labor turn-over. Goals may otherwise be stated as the efficiency, health and happiness of our employees. Neither pantry maids nor anyone else can perform their duties skilfully unless they are satisfied with their positions. The following suggestions are made with this in mind.

Until last October the nurses at Barnes Hospital served the food from heated carts in the floor pantries. At present, the maids, under the supervision of dietitians, do all the serving. One of our primary problems has been to train the negro pantry maids of average or sub-average intelligence to serve trays to conform to our standards.

We find that clear-cut, written instructions are essential. Not only are they easy for the workers to comprehend, but they add an aura of importance conducive to the necessary cooperation. Therefore work schedules, menus, recipes for food prepared on the floors, and instructions for cleaning are all typewritten and posted in conspicuous places in the pantry. We try to place them as near the actual working areas as possible. Verbal orders, when necessary, should be uncomplicated and few in number and whenever possible should be positive rather than negative statements.

About once a week we have classes of short duration for all the maids in which we briefly outline our general policies and give specific directions for various phases of their work. Each of their suggestions is carefully considered for the maids are made to feel that they are an essential part of the organization. In this manner we hope to instigate a healthy and cooperative attitude.

There is one other scheme which we are employing in the private pavilion. So far it has produced excellent results. All new maids are being trained in one pantry, generally the one having the fewest number of trays. The regularly scheduled maid in this pantry is one of our best, doing her work with precision and accuracy. A new maid is taken to the pantry and shown the placement of equipment, the methods of cleaning, the utensils used for serving and the daily work schedule. For one day she observes the regular maid serve the trays. During this time the dietitian is on the job and alert in pointing out the significant features of serving. The second day the new employee is allowed to serve a few of the trays under the supervision of both the regular maid and the dietitian. The third day she serves all the trays and helps with the cleaning while the regular maid spends most of her time doing some special cleaning. Thus the new maid is really in charge of the pantry, for by this time she has attained sufficient skill to follow the time schedule, which, after all, is an important consideration. She is then ready to take over any one of the pantries with a little extra supervision by the dietitian.

There is no confusion when a maid is stationed in another pantry since all the pantries as far as possible are standardized: the same equipment is used and kept in the same places; each type of food is served in a specific manner; and work schedules are identical. This plan is necessary not only for new employees but for maids relieving in six pantries a week while regular maids have their days off.

Two difficult problems we face are the most efficient methods of work and the need to educate our maids to follow these methods. All this entails a study of motions to determine which are productive and which non-productive. We must then persuade the maids to follow our instructions. Each small portion of their work is closely analyzed. For instance, they are taught to put jelly in soufflé cups by pushing it off one spoon with another spoon instead of waiting until it drops off. They must learn to make *one* instead of *two* trips to the basement to get linen and take the food carts down. When the dietitian demonstrates the two methods and explains that she is trying to make their work easier and more accurate, workers are willing to follow her instructions.

Among other devices used to obtain optimal efficiency is the discriminating use of praise and criticism. While we expect them to do good work, maids are much happier if their good qualities are noted occasionally. Any deserved censure, of course, should be given privately.

An often neglected phase of personnel work is health education. Most hospitals include some medical care as a part of their employees' compensation, but this is not enough. We, as dietitians, should help our pantry maids to keep in optimal health. The first consideration should be to see that the meals served in the hospital cafeteria are nutritionally adequate. Then, in classes and individual discussions we must impart information on diet and hygiene. Help with personal budgets is certainly not amiss. This extra attention encourages satisfaction and efficiency among workers.

In conclusion, we find that if we treat pantry maids as we would wish to be treated, that is, give them definite instructions and help them do their work in the best and most efficient way, and at the same time encourage them to feel that they are an integral part of the organization, they will, in turn, reciprocate with good work and loyalty.

Rubber Conservation

Among the tips for conserving rubber furnished by the April 15 issue of *Consumers' Guide* are the following, which may be new to dietitians: Don't let rubber come in contact with copper, even in very small amounts, as this causes rubber to get soft and sticky, then hard and brittle. Never wear rubber gloves when you polish brass or copper if you want the gloves to last, and don't wear them when you scrub pots and pans with a ball of copper thread.

Before you put the washing machine away always dry the wringer rolls carefully, and always release the pressure on the rolls to prevent sticking. Be careful to fold buttons and buckles inside the clothes before starting them through the wringer. Remove any discoloration on the rollers with a cloth dampened with kerosene or carbon tetrachloride. If you use kerosene, wash every bit of it away with soapy water, then rinse and dry. Keep wringer covered when not in use.

Avoid touching the rubber gasket around your ice box door with your hands as you open and shut the door, and wash it with mild soap solution each week. Take extra care of electric cords for vacuum cleaners, electric ions, and other electrical appliances. Coil them loosely without kinks or bends, when not in use. Repair damaged insulation promptly, winding with friction tape when only the fabric cover is worn and with electrician's tape, then friction tape, when rubber insulation is gone.

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"TIME and money saving meals" is a recently compiled collection of tested recipes and menus which has been assembled to give assistance in preparing appetizing, delicious, inexpensive meals that are more wholesome.

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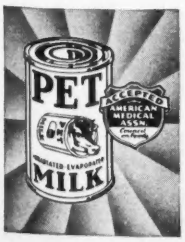
These dishes cost less because Irradiated Pet Milk costs less generally than ordinary milk. Used as cream, it costs less than coffee cream—much less than whipping cream.



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Book Reviews

Diseases of Metabolism. Detailed Methods of Diagnosis and Treatment. Edited by Garfield G. Duncan, M.D. Philadelphia: W. B. Saunders Company, 1942. Cloth. Illustrated. Pp. 985. Price $12.

The practicing physician and dietitian will welcome this important book which authoritatively, and withal simply, details the background of that complicated problem, metabolism, both in its normal and abnormal aspects, and the methods of detecting and treating metabolic disturbances.

As the late Sir Frederick Banting has said in the foreword: "There are few branches of medical science in which sound knowledge has advanced so rapidly as has been the case in the field of the diseases of metabolism. Metabolism can be treated as an entity in a laboratory but, in dealing with diseases of metabolism, it is found necessary to invade the fields of nutrition, endocrinology and even hematology." Thus, in order to cover this important and basic subject adequately, the editor, Dr. Duncan, chose a group of distinguished authorities in the several specialized and related fields to assist him in the task, including: C. N. H. Long, Ph.D., who writes on carbohydrate metabolism, and the etiology of diabetes; Abraham White, Ph.D., assistant professor of physiological chemistry, Yale University, protein metabolism and lipid metabolism; Abraham Cantarow, M.D., mineral metabolism and the chapter on melituria; John P. Peters, M.D., water balance in health and disease; Tom D. Spies, M.D., and Hugh R. Butt, M.D., vitamins and avitaminoses; L. H. Newburgh, M.D., undernutrition; and Frank H. Evans, M.D., obesity. The remaining topics discussed in special chapters by the editor and his other associates include: nutritional and metabolic aspects of disorders of the blood; xanthomatoses, glycogen disease, and disturbances of intermediary metabolism; gout; hyperinsulinism; diabetes insipidus and diabetes mellitus. Of these last, the chapter on gout is the most comprehensive, well-thought-out discussion of the subject yet seen, in which many of the hoary ideas on the diet therapy of gout are dispelled. That on diabetes, by Dr. Duncan, is more than a chapter; it is a well-rounded 216-page treatise on the subject which will bring the dietitian up to date on this perhaps most important of all the diseases of metabolism. Here the author acknowledges the assistance of Martha Tarbox and Martha Alderman, dietitians. Miss Tarbox' assistance is also acknowledged in compiling the appendix which includes tables of the protein, fat, carbohydrate and caloric values of foods in grams and household measure.

Every dietary department responsible for the training of student dietitians and every college specializing in their academic preparation should have this book as a reference. Teacher, student and practitioner, alike, will find it an invaluable aid.

Nutritional Deficiencies: Diagnosis and Treatment. By John B. Youmans, A.B., M.S., M.D., Associate Professor of Medicine, Vanderbilt University Medical School, Nashville, Tennessee. Assisted by E. White Patton, M.D. Philadelphia: J. B. Lippincott Company, 1941. Cloth. Illustrated. Pp. 385. Price $5.

This book, concerned with the popular subject of nutritional deficiencies, reflects the seasoned viewpoint and sober analysis of a distinguished physician whose restrained attitude lends greater credence to his conclusions. The content is presented so as to appeal to the clinician, whose busy life admits no detailed and time-consuming searching of the "ifs" and "buts" in scientific literature. It is a matter-of-fact book which will assist those who must test, by practical application, the sometimes theoretical conclusions of the laboratory.

The nature, function and sources of the various food factors are covered to provide background for a better understanding of the diseases produced by a deficiency of one or more of these factors. Similarly, the proper use of these foods is discussed only as this bears on the prevention and treatment of the deficiency diseases under consideration.

Much space is given to the various clinical phases of nutritional disease: etiology, pathogenesis and diagnosis (including technical details of the various laboratory tests).

Excellent photographs and drawings, which will materially aid diagnosis, add to the value of this well-prepared book.

Hutchison's Food and the Principles of Dietetics. Revised by V. H. Mottram, M.A., and George Graham, M.D. Ninth edition. Baltimore: The Williams & Wilkins Company, 1940. Cloth. Pp. 648. Price $6.75.

This familiar book deserves inclusion as a classic. Since it was first published in 1900 it has mirrored, through nine editions, the phenomenal progress of the science of nutrition since the beginning of its rejuvenation early in the 20th century. When Sir Robert Hutchison completed the first edition, few if any, even among the medical profession, perceived the need of pursuing the scientific study of nutrition in order to feed the well and treat the diseased.

The authors of the edition under review have wisely foresworn a recompilation or revision along encyclopaedic lines, such as that of earlier editions. This edition is more in the nature of a textbook and, with the exception of Sir Robert's introductory chapter, "The History of Dietetics," which should be required reading for all who are or would be dietitians, the book now bears little resemblance to its slightly "stuffy" (to modern eyes) forebears. The current edition, by the very fact of its refreshing approach, so unlike that of any textbook on dietetics or nutrition commonly found on the reference shelves of American dietitians, should prove profitable, stimulating, and really enjoyable reading.

In the introductory chapter the authors take a fling at such vague terms as "food value"; "balanced diet"; "nour-

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ishment"; "malnutrition"; and so on, perhaps unaware that some of these and other likewise difficult-to-define terms are beginning to be in mild disrepute on this side of the Atlantic, too. At any rate it is somehow soothing in a day filled with war "jitters" to find two writers on dietetics and nutrition who admittedly have been evacuated or "dispersed" from their usual haunts, yet who go on leisurely, carefully, and above all, philosophically preparing us for a better world, dietetically. Whether or not the ammunition packed into the chapter on "Definition of Dietetics" was intended to land on these shores, it strikes home and gently spoofs the absurd attempts and wishful thinking of those devotees of exactitude who calculate diets to the third decimal point. All this warms up the writers, as one might expect, for a discussion of the "extreme variability of the individual" from which point they proceed methodically with the functions of foods; the cooking of foods; the digestion, absorption and metabolism of foods in health; and normal dietetics.

Part 2, the nature of foods, takes up individual foods in detail: structure and composition; nutritive value; and economic worth. Part 3, the principles of feeding in infancy and childhood, and Part 4, diet in treatment of disease, which includes "some dietetic 'cures' and 'systems' " and an adequate index, complete the book, which is wholeheartedly commended by this reviewer. Biochemist, nutritionist and dietitian, all will find it salutary. Its dry humor, literary style and broad coverage of both the English and foreign language scientific literature, the whole nicely seasoned with an adventurous touch of iconoclasm, make nourishing food for thought.

Manual for Managers of Rural and Other Small School Lunchrooms. Prepared and published by the Ohio Dietetic Association, 1942. Paper. Pp. 225. Copies may be obtained from Mrs. Alice H. Smith, 1001 Huron Road, Cleveland. Price $1.50.

This manual, conveniently and attractively plastic-bound and printed on durable glossy paper, comes at an opportune time, for it will be of really practical assistance in the nutrition program. The first seventy pages present a short course of instruction in the technique of the school lunch. Apparently nothing has been overlooked and full consideration appears to have been given to the fact that many who will use the book may not have had training at the professional level. Helpful material includes a measuring stick for a "Grade A" lunch; "Grade A" lunch menus for one school month; full directions for the preparation and selection of lunches; and data on service, personnel, equipment, location of lunchroom, food purchasing, cost accounting, and sanitation.

The balance of the book is devoted to recipes, menu suggestions, an index, and other tabular material covering common food measurements, tables of yields and servings, and the uses of dried milk. The recipes are presented in simple, legible form in amounts for 12, 25, and 50 servings with the approximate size per serving, stated in measure, weight, size or slice. The numbered step procedure is used in the recipes, and space permits including the cost per serving and the cost with food surplus commodities. There should be considerable demand for this manual.

Food and Beverage Analyses. By Milton Arlanden Bridges, M.D., Late Assistant Clinical Professor of Medicine, New York Post-Graduate Medical School, and Marjorie R. Mattice, M.S., Assistant Professor of Pathological Chemistry, New York Post-Graduate Medical School. Second edition, enlarged and revised. Philadelphia: Lea & Febiger, 1942. Flexible binding. Pp. 344. Price $4.

The current edition of this helpful book has been carefully revised by Miss Mattice who is well fitted for the task. In order to keep the book within a convenient size, the table of nutritive and caloric values of the food has been reduced by means of restyling the commercial entries and limiting large groups, such as the reclassification of meats, for which a brief summary is substituted.

The new data include tables on the acidity of foods, their fiber content, the occurrence of sulfur, bromine, calcium, oxalate, phytins, purines, available carbohydrates, and ionizable iron. The reaction of foods is covered in a table of *pH* values which embodies all the common and many uncommon foods. There is a table of organic acids in fruits, vegetables and a few miscellaneous items. Extensive information is given on the acid-ash and alkaline-ash factors and a table on the mineral constituents of various foods estimated in milligrams per 100 grams of fresh, edible substance is also included.

Miss Mattice states that the chief purpose of the book is to "provide analytical data on the largest possible number of food factors so that the student of home economics, the dietitian, the nurse, the welfare worker, the industrial chemist, the medical student and clinician may have access to practical facts presented in a readily understandable fashion." The author acknowledges the assistance of Dorothy M. Stephens, chief dietitian, New York Post-Graduate Hospital, among others.

It should be noted that the book really covers more than its title indicates. For instance, the chapter on the vitamins constitutes a condensed summation of our present knowledge in this respect, including function, requirement, and sources, and an excellent glossary of vitamin terms. Many of the numerical values for the vitamin content of foods are based on material presented by Hazel E. Munsell in this JOURNAL for April 1940 and later in the *Milbank Memorial Fund Quarterly*.

First Aid Primer. By Hermann Leslie Wenger, M.D., and Eleanora Sense, M. Sc. New York: M. Barrows & Company, Inc., 1942. Cloth. Illustrated. Pp. 104. Price $1.

This primer of miscellaneous advice on behavior in a war emergency is rather obviously "written down" to the level of lay persons ranging from the not quite illiterate to those who are able to read with fair intelligence popular articles on first aid and nutrition, but who seldom do. It is hoped that the colorful jacket and the efforts of the publisher will succeed where other means may have failed to attract these readers.

A little over half of the book is devoted to the principles of first aid and is in large part a brief of the Red Cross course, except for the chapter on poison gas and incendiary bombs. Omitting all background, or informational material which is included in the Red Cross Manual, the barest instructions for "do's" and "don'ts" in the treatment of injuries are given. For those who cannot take the Red Cross course this is at least better than no instruction at all and should prevent some needless suffering in the event of a catastrophe. Two excellent chapters on the fundamentals of emergency feeding and blackout instructions follow, which will serve to supplement and tie together the fragmentary information gleaned from newspapers and air raid warden instruction sheets. A concluding chapter entitled "Morale Through Nutrition" gives the daily requirements of foods for maintaining health and reiterates in words of one syllable (Samples: *vide* p. 97, "The vitamin B complex formerly had but one vitamin," and p. 99, "The sun's rays when shining on a body, will permit a conversion of vitamin D in the body.") the principles which nutritionists are trying to teach through various other media. While it seems that almost every housewife must have heard many times the advice set forth in this chapter, frequent repetition is recognized as one effective teaching method and the optimist tells us that constant dripping will eventually wear away the hardest stone. In general, in spite of the fact

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that *First Aid Primer* is lacking somewhat in unity, and that careful editing, especially in the use of subheads, appears to have been sacrificed to the expediency of getting it into circulation, the book will probably serve the purpose for which it was intended.

Twenty-Seventh Annual Report, Forsyth Dental Infirmary for Children. Forsyth Dental Infirmary, The Fenway, Boston, Massachusetts, 1942. Paper. Illustrated. Pp. 32.

The report lists five out of a total of eight staff publications for the year 1940–41 with Ruth L. White's name as author or co-author. It is of interest, too, that the lecture course to dental interns gives more and more attention to the subject of nutrition in relation to teeth. Those lectures, specifically on nutrition, are presented as in past years by Dr. George R. Minot and Miss White, with Bertha Shapley Burke, instructor in nutrition, Harvard University, lecturing on "Nutrition Studies in a Research Child Development Program," and Dr. Mark D. Elliott, member of the research staff of the Infirmary, discussing "Retardation of Caries by Nutrition." According to the yearly report, the number of active cases seen in the Nutrition Department totaled 1022 among a total number of 8128 new cases registered at the Infirmary. Miss White, who is chief of the Nutrition Department, is at present assisted by C. Irene Goodhue and Helen R. Levin.

Sugar Rationing

Rationing order No. 3 from OPM, dated April 23, 1942, sets forth in detail the regulations for the sugar rationing program to individual consumers and trade users, as well as the sugar quotas allowed to all forms of industrial and institutional users. Restaurants and other food services are allowed to obtain 50 per cent of the amount of sugar used during the corresponding month last year, or the amount used during March, 1942, while bakers, manufacturers of confectionery, ice cream, dairy products, preserves, bottled beverages, desserts and other specialties will be entitled to an allotment of 70 per cent of past use. Among the special provisions of the order is one for consumers who because of transportation difficulties find it a hardship to buy sugar in the quantities allowed during each ration period, and another for consumers who by reason of illness require more sugar than the normal ration. An application form, designated as OPA Form No. R-315, may be used by the latter group to appeal to local rationing boards for the additional quantity required, the application to be accompanied by a doctor's certificate stating the additional amount of sugar required and explaining why it is needed.

Industrial and institutional users of sugar who registered April 28–29 received either an allotment to cover their needs from the date of registration till June 30 or a "provisional allowance", depending on the products for which the sugar is used. Provisional allowance is "determined by multiplying the number of units of such products which the owner estimates will be produced by the registering unit during the period for which the application is being made by the quantity of sugar which is permitted as the maximum amount per unit" of the product. Tables setting forth the quotas per unit of product are included in the order. In the table for canned vegetables, corn (cream) is allowed a maximum of 1¼ lb. sugar per unit, which in this case is stated as "24/2's." For beets, carrots, carrots and peas, whole kernel corn, vacuum pack corn, peas, and succotash, lesser amounts of sugar are allowed, and no sugar for all other canned vegetables. Canned fruits and fruit juices are listed as having allowances of 90 per cent of average quantity used per unit of all grades during 1941. Allowances of sugar for use with frozen fruit are given for containers of 30 lb. weight or greater and for wrapped packages, and for canned or cured meats, fish, and poultry regardless of how packaged. Two pounds of sugar are allowed per unit (6 lb.) frozen strawberries and equal amounts for frozen apricots, nectarines, and peaches, packed in containers of 30 lb. weight or greater; lesser amounts are allowed for apples and crabapples, cherries, citrus pulp and citrus marmalade base, loganberries, peaches, plums, raspberries, raspberry puree, and rhubarb; and none for other frozen fruits. For each unit (100 lb., unprocessed) of dry cured pork products, 1.3 lb. sugar is allowed, and lesser amounts for sweet pickled pork products, dried and corned beef and beef tongues, canned luncheon meats and canned spiced ham, dry sausage, fresh sausage and baked loaves, lamb tongue and lunch tongue, and for pickled or cured fish, shellfish or poultry product, 70 per cent of the amount used per unit during 1941.

An "allotment," in the case of institutional users, is based on the amount used during each corresponding month in 1941 or the amount used in March, 1942, these amounts to be designated as "bases" for computing allotments. A schedule of the ration order sets forth the "percentage of sugar base" for meals or food services as 50 per cent; and for bread, other bakery products, cereal products, batters, mixes, confectionery, ice cream ices, sherberts, preserves, production of bottled beverages, desserts, and other food products as well as non-food products such as drugs and medicines, soaps, insecticides, adhesives, etc. the allowance is 70 per cent of "base."

Industrial users of sugar for packing or processing of products must include under sugar all the dextrose and corn syrup which they use. The regulations provide that one pound sugar is equivalent to 1.2 lb. dextrose or 1.4 lb. corn syrup.

Under the terms of the order, a violation of the regulations is punishable by a maximum fine of $10,000 or imprisonment of not more than one year, or both.

Marie Gifford Contributes

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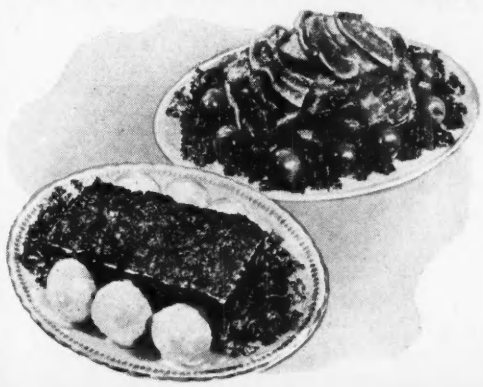

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Marie Gifford

Director, Food Economics Department

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Current Literature

AMERICAN JOURNAL OF DIGESTIVE DISEASES

Vol. 9, February 1942

* Gall bladder dyspepsia. H. Moser, D. Rosenak and J. Hasterlik.—p. 49.
* Halitosis, true and false. R. Drosd and B. B. Crohn.—p. 79.

Gallbladder Dyspepsia. Food intolerance in gallbladder disease is identical with that encountered in a variety of gastro-intestinal disorders. Dyspepsia is not relieved by cholecystectomy and should not in itself be an indication for operative procedures.

Halitosis. True or essential halitosis probably depends on some fault in fat digestion and its intestinal absorption and splitting or in the hepatic reassembly of fatty acid radicals and soaps with newer human equivalents of sterols and fats. In the course of this disturbance, intestinal or hepatic, volatile substances are absorbed into the circulatory medium and are excreted by the lungs on the expired air, tainting the breath with a malodor. Bad taste alone is a subjective sensation, usually founded on an intestinal or gastric disturbance. It is not in itself related to, or productive of, bad breath odor. Coated tongue is only occasionally the sole cause of halitosis, and probably only when a chronic disorder of intestinal indigestion or of fat metabolism and absorption exists. True halitosis exists most often independent of taste or tongue changes, and the patient is unaware of the condition.

AMERICAN JOURNAL OF DISEASES OF CHILDREN

Vol. 63, February 1942

* Obesity in childhood. I. P. Branstein, S. Wexler, A. W. Brown and L. J. Halpern.—p. 238.
Nutritional requirements of children: A résumé. W. J. Dann and W. C. Davison.—p. 366.

Obesity. From comprehensive physical studies of 35 children, no ascertainable endocrinologic evidence was found as a basis for their obesity. Sedentary habits, abnormal appetites, parental attitudes and other environmental factors probably contributed to the adiposity of these children.

AMERICAN JOURNAL OF PUBLIC HEALTH

Vol. 32, February 1942

* Food poisoning outbreaks involving smoked fish—their epidemiology and control. I. Kleeman, S. Frant and A. E. Abrahamson.—p. 151.
* Shall public school physicians attempt to assess nutritional status of school children? S. P. Souther.—p. 166.
Development of training courses for food handlers in Texas. L. Dodson.—p. 189.

Contributed by Colleen Cox Hambleton, Food Utilization Division, Bureau of Home Economics, U. S. Department of Agriculture, Beltsville, Maryland, and Quindara Oliver Dodge, School of Home Economics, Simmons College, and Women's Educational and Industrial Union, 264 Boylston Street, Boston.

Smoked Fish. Two outbreaks of food poisoning traced to smoked whitefish, butterfish, and carp are described. Recommendations for the proper preparation, storage, and refrigeration of this perishable product are offered.

Nutritional Status. The clinical assessment of nutritional status of school children is still the best single means of determining the nutritional condition of the children. The accuracy of the clinical method is increased by making the examination as objective as possible, and by taking into consideration any disease present, and the dietary, activity, and growth history of the child.

ANNALS OF INTERNAL MEDICINE

Vol. 16, February 1942

* Vitamin D in the treatment of infectious arthritis. C. H. Slocumb.—p. 241.

Vitamin D in Arthritis. Large doses of vitamin D were of help in partially controlling the symptoms of infectious arthritis in 7 of 14 patients. Vitamin D therapy should be considered as only one of many types of treatment which is sometimes of help in temporary and partial control of symptoms of this disease.

ARCHIVES OF INTERNAL MEDICINE

Vol. 69, February 1942

Diseases of nutrition. Review of certain recent contributions. H. R. Butt, W. V. Leary and R. M. Wilder.—p. 277.
Diseases of metabolism. A. G. Hildebrand and E. H. Rynearson.—p. 344.

BULLETIN OF THE NEW YORK ACADEMY OF MEDICINE

Vol. 18, March 1942

* Effects of renal extract on hypertension. A. Grollman, J. R. Williams, Jr. and T. R. Harrison.—p. 190.
* Diabetes in pregnancy. H. O. Mosenthal.—p. 217.

Hypertension. Extracts of normal kidneys when administered to animals with experimental renal hypertension cause decline in blood pressure. The administration of such extracts to a few patients with either renal, or so-called "essential" hypertension, has been followed in certain instances by decline in blood pressure and by clinical improvement. The possibility that the changes observed in patients may have been of spontaneous, rather than therapeutic, origin has not been completely excluded. Although the results of the administration of renal extract to patients are perhaps of significance in regard to the mechanism of hypertension, they have no therapeutic importance at the present time.

Diabetes in Pregnancy. Pregnancy accentuates an existing diabetes, and favors the development of diabetes in later years. In older diabetics there is an unavoidable predisposing factor to stillbirths. Large amounts of vitamin B_1 are required during pregnancy and particularly when diabetes exists. According to Wilder, many of the complications of diabetic pregnancies may be set aside by suitable

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* *The quotation is from "The Prompt-Feeding Program for Bleeding Gastric and Duodenal Ulcer" by J. T. L. Nicholson, M.D., and T. Grier Miller, M.D., Amer. Jrl. Dig. Dis., 8: 446, January, 1942.*

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doses of B_1. The impression is growing that asphyxia of the infants of diabetic mothers is a frequent cause of neonatal death. It is possible and would appear to be probable that regulation of the diabetes (meaning adequate deposit of glycogen in the tissues, ample oxidation of glucose and freedom from acidosis) from the very beginning to the termination of pregnancy in a diabetic woman will do away with all the complications of pregnancy to which mother and fetus are liable. Sudden and marked variations in the severity of the diabetes may occur in the course of pregnancy, especially during the second and third trimesters. During labor care should be taken to check acidosis and to prevent hypoglycemia in the mother.

JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

Vol. 118, February 14, 1942

* The specific gravity of healthy men. A. R. Behnke, B. G. Feen and W. C. Welham.—p. 495.

Vol. 118, February 21, 1942

* The physiology of work. A. C. Ivy.—p. 569.
* Failure of aminoacetic acid to increase the work capacity of human subjects. E. Q. King, L. B. McCaleb, H. F. Kennedy and T. G. Klumpp.—p. 594.
* Recognition of early nutritional failure in infants, children, adolescents and adults.—p. 615.

Indiscriminate administration of vitamins to workers in industry.—p. 618.

Vol. 118, February 28, 1942

* Histone zinc insulin, globin (zinc) insulin and clear protamine zinc insulin C. C. Bailey and A. Marble.—p. 683.
* The etiology of diabetic acidosis. I. A. Mirsky.—p. 690.
* Avoidance of degenerative lesions in diabetes mellitus. J. D. Boyd, R. L. Jackson and J. H. Allen.—p. 694.

Obesity and Specific Gravity. Values of specific gravity for healthy men ranging in age between 20 and 40 fall between 1.021 and 1.097. Low values indicate obesity and high values denote leanness. Individual loss in weight through exercise and a restricted diet is associated with an increase in specific gravity.

Work Capacity. Thirty-three male subjects were given 4.5 to 6 gm. aminoacetic acid daily, under rigidly controlled conditions, for 3 weeks. There was no effect on the work capacity. Claims made for the especial value of aminoacetic acid or gelatin in the treatment of fatigue or to increase endurance are unfounded. The protein of the ordinary diet is fully capable of supplying the aminoacetic acid requirements of man. Gelatin is deficient in methionine.

Signs of Nutritional Failure. No symptoms or physical signs can be accepted as diagnostic of early nutritional failure. Certain symptoms and physical signs when verified by a competent physician and when other possible causes have been ruled out should be considered as significant indications. Among twenty-five signs listed are lack of appetite, loss of weight, lack of mental application, loss of strength, nervousness and irritability, and muscle and joint pains.

Indiscriminate Vitamins. Satisfactory evidence of the wisdom of industrial concerns providing all of their employees indiscriminately with vitamins is lacking. If an employee is in a good nutritive state, the continuance of a good diet of natural, protective foods should suffice.

Insulins. Histone zinc insulin, globin (zinc) insulin and clear protamine zinc insulin are all insulins with prolonged action. The action of histone zinc insulin is longest with a slight blood sugar-lowering effect within 2 hours after injection. Larger single doses may be given without producing late hypoglycemic reactions. Histone zinc insulin is not on the market at the present time.

Diabetic Acidosis. The most important cause of diabetic ketosis is impoverishment of the liver with respect to excessive glycogen. Excessive carbohydrate intake does not produce such an effect, whereas deprivation of insulin does. Any other phenomenon which will accelerate the depletion of glycogen in the liver will result in a secondary acceleration of fat oxidation and the consequent secretion of acetone bodies which pass into the blood stream in excessive amounts.

Diabetes. Adequately controlled diabetes mellitus does not predispose the child to degenerative diseases or to disturbance of growth.

JOURNAL OF BIOLOGICAL CHEMISTRY

Vol. 142, February 1942

* The relation of the *p*H of intestinal contents to calcium and phosphorus utilization. J. H. Jones.—p. 557.
* The effect of dibenzanthracene, of alcohol, and of other agents on vitamin A in the rat. C. A. Baumann, E. G. Foster and P. R. Moore.—p. 597.
* The isolation of biotin from milk. D. B. Melville, K. Hofmann, E. Hague and V. DuVigneaud.—p. 615.

Studies on the urinary excretion of pantothenic acid. R. H. Silber and K. Unna.—p. 623.

* The influence of supplementary casein, cystine, and methionine on liver lipid content. C. R. Treadwell, M. Groothuis and H. C. Eckstein.—p. 653.

Intestinal *p*H and Calcium Metabolism. The most alkaline portion of the intestinal tract was the distal one-fourth of the small intestine. When given in addition to a rachitogenic diet, lard, oleic acid, and vitamin D all increased the acidity of the lower portion of the ileum and less consistently increased the acidity of the cecum and colon. Addition of aluminum sulfate resulted in severe rickets and a definite increase in *p*H throughout the greater part of the intestinal tract. The addition of dibasic phosphate to a low-phosphorus rachitogenic diet protected against rickets without changing the *p*H of the intestinal tract. Lactose produced as much acidity in the lower intestinal tract as did lard but it did not show any antirachitic action.

Vitamin A. The injection of dibenzanthracene and of methylcholanthrene reduced the amount of vitamin A in the livers of rats and increased the amount in the kidneys. The effect of the dibenzanthracene was not counteracted by cystine, nor by diets high or low in vitamin E. Diets low in protein reduced the storage of vitamin A in the liver and increased the rate at which stored vitamin A was depleted. Results are in harmony with the suggestion that the vitamin is held in the liver in the form of a protein complex.

Biotin from Milk. A method for the isolation of pure crystalline biotin from a milk concentrate has been described.

Amino-Acids and Liver Fat. Cystine was added in increasing amounts to a low-casein, high-lard basal diet supplemented with sufficient amounts of methionine to make the total methionine content equivalent to that of a ration containing 20% casein as the sole source of protein. No substantial increase in the liver lipid content of young rats was observed until a level of 1017 mg. % of total cystine was reached. Diets supplemented with methionine as the free amino-acid were superior to those containing equivalent amounts of methionine in the form of casein.

JOURNAL OF NUTRITION

Vol. 23, February 1942

* The effect of added glucose upon the digestibility of protein and of fiber in rations for sheep. T. S. Hamilton.—p. 101.
* Effect of controlled ascorbic acid ingestion upon urinary excretion and plasma concentration of ascorbic acid in normal adults. C. A. Storvick and H. M. Hauck.—p. 111.
* Nutritional studies on powdered wool. J. I. Routh.—p. 125.

The interrelationship of manganese, phosphatase and vitamin D in bone development. G. F. Combs, L. C. Norris and G. F. Heuser.—p. 131.

* The need for pantothenic acid and an unidentified factor in reproduction

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FOR MECHANICAL DISHWASHING OF CHINA, GLASS, SILVER

in the domestic fowl. M. B. Gillis, G. F. Heuser and L. C. Norris.—p. 153.
* Biotin in chick nutrition, D. M. Hegsted, R. C. Mills, G. M. Briggs, C. A. Elvehjem and E. B. Hart.—p. 175.
* The iron requirement of children of the early school age. F. A. Johnston and L. J. Roberts.—p. 181.
* The ascorbic acid requirements of children. O. A. Bessey and R. L. White.—p. 195.

Sugar and Digestibility. Corn sugar increased the apparent digestibility of dry matter, N-free extract, and total carbohydrates in 6 experimental sheep. It decreased the apparent digestibility of total nitrogen and crude fiber, and decreased the metabolizable energy content.

Vitamin C Metabolism. Lower urinary and plasma ascorbic acid values were observed in 6 normal adults on the lower levels of ascorbic acid intake but there were marked variations in the same subject from day to day, and between individual subjects during twenty-one 28-day periods. There was a definite correlation between the daily urinary excretion and the plasma concentration of ascorbic acid on the lower levels but not on the higher levels. Supplements of from 65 to 150 mg. ascorbic acid, in addition to approximately 10 mg. in the basal diet, were required to maintain tissue saturation.

Studies on Powdered Wool. Powdered wool as the sole source of protein in an otherwise adequate diet is incapable of supporting growth in young rats. Tryptophane, methionine, histidine, and lysine were found to be present in suboptimal concentration.

Pantothenic Acid in Reproduction. Pantothenic acid is required for reproduction in hens. The addition of this vitamin to the basal diet increased hatchability from zero to 10 to 30 per cent. When it was added to the basal diet along with the factor, or factors, in liver extract, hatchability was increased 50 to 60%.

Biotin. Biotin concentrates and free crystalline biotin prevent a typical dermatitis and promote growth in chicks. The biotin requirement of the chick is at least 7 to 10 μ g. per 100 gm. ration.

Iron Requirement of Children. Good hemoglobin levels in early school-age children could be maintained on 11.4 mg. per day or 0.35 mg. per kilogram when the rest of the diet was adequate.

Ascorbic Acid Requirements. Blood plasma ascorbic acid analysis on 93 healthy city children whose ascorbic acid intake was evaluated from thorough dietary histories is presented. Eighty per cent of the children who received 3 oz. or more orange juice daily or an equivalent amount of ascorbic acid in citrus fruits and tomatoes maintained a blood plasma level of ascorbic acid indicating a liberal intake. A few individuals had low blood plasma values in spite of a regular and adequate intake. The amount of ascorbic acid consumed daily from sources other than citrus fruits and tomatoes, that is, other fruits and vegetables, was insufficient to influence the blood plasma values. In taking nutritional histories the evaluation of the citrus fruit and tomato intake is a simple, practical, and accurate means of determining ascorbic acid consumption.

AMERICAN RESTAURANT MAGAZINE

Vol. 26, January 1942

* Red Cross mobilizes restaurant mass feeding facilities. T. D. Gibbons.—p. 14.
* Cessna's rolling restaurants save man-hours for defense.—p. 24.

Vol. 26, February 1942

* Canned goods specifications and buying procedures. A. Frooman.—p. 22.
* Budget stretching meals. L. D. Freeman.—p. 26.
* Highlights of the New Jersey school lunch conference.—p. 62.
Time table for cooking fresh vegetables.—p. 65.

Vol. 26, March 1942

Analyze job requirements for women in food field.—p. 12.
Industrial feeding—centralized or decentralized? F. Schmid.—p. 28.
* Some timely suggestions for the meat buyer. D. Penn.—p. 37.
* The child nutrition project in New York City. G. H. Chatfield.—p. 61.

Mass Feeding. Through a cooperative agreement with the American Red Cross, restaurateurs are being organized to take over mass feeding whenever there is need. Mass feeding problems may include the utilization of restaurants as central feeding stations, the preparation and serving of food on premises other than those of National Restaurant Association members, and the use of feeding equipment for mobile field kitchens.

Rolling Restaurants. One thousand 4-course meals are served and consumed in 20 minutes at the Cessna Aircraft Company, Wichita, Kansas. Rolling wagons were developed to meet the need of serving 1000 plant employees three times a day. The "Vitamin Wagons" consist of electrically-heated ovens in which luncheon plates are placed after having been served in the central kitchen. Wagons are rolled to various locations in the plant and food is served by a single attendant. Wagons are preheated but can be reheated at the serving location to ensure prope food temperatures. Meals are priced at 21 and 26 cents and serving in each center takes 6 minutes. Lunch periods are thus reduced more than 30 minutes.

Buying Canned Goods. If institution food buyers compiled a set of canned goods specifications suitable to their type of food service, a minimum 80% buying efficiency as against an average buying efficiency at present of approximately 50% would result. Three steps are necessary: ascertain what canning industry has to offer; decide quality or grade best suited to one's particular needs; compile specifications covering decisions based on accepted government grades. Specific information concerning grades for canned goods is obtainable through Agricultural Marketing Service, the Food and Drug Administration, and national organizations of the canning industry. Specifications should include quantity, size of container, grade, variety and geographical location, count, type, and syrup density (if fruit).

Budget Meals. Suggests means of incorporating more cereals, breads, milk, cheese, vegetables, and less tender cuts of meats in menus. Left-over cooked vegetables are easily made into tempting soufflés. Cheese sauce and vegetables—asparagus tips on toast with cheese sauce—make acceptable meatless entrées. Beets may be seasoned with minced onion, a few cloves and stick cinnamon. Chopped mint adds color and flavor to diced, cooked celery. Cooking the outside stalks of celery or broccoli and beet tops makes extra vegetables. Sugar rationing will make fresh fruits more popular than ever. Dried fruits require little or no sugar if lemon or lime juice is added to bring out the fruit flavor. Dried or canned fruits can be combined with cereals in muffins, waffles, or puddings. Lemon-rice pudding is sweetened with honey and flavored with lemon juice.

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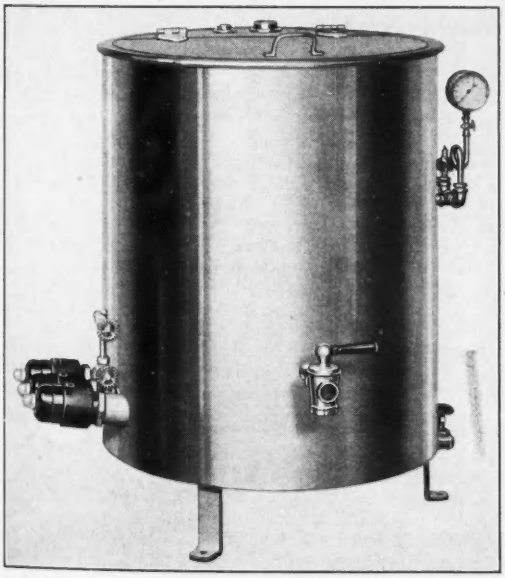

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Dates or figs are a different addition for Indian pudding. Bread pudding is very good with a chocolate chip dress-up, or spread with jam and topped with a golden meringue.

School Lunch Conference. The New Jersey State Nutrition Council at a recent meeting concluded that the average public school lunch menu is alarmingly deficient in all requirements, calories included. Alarming, too, was the evidence of poor selection of available foods by the average student. It was pointed out that boards of education, school administrators, teachers, and parents, as well as pupils, must get their share of a nutrition education program. Nutrition can be made an essential part of all study matter—history, economics, geography, chemistry, and physical education. A well-managed school lunchroom should be attractive, non-profit-making, and should employ skilled workers. It was suggested that smaller portions of sweets be served and larger portions of more essential foods, that oleomargarine with added vitamin A be used in place of butter, and evaporated milk in all cooked dishes. The luncheons should be planned to supply one-fourth to one-third the recommended daily allowances for protein, vitamins, and minerals.

When Buying Meat. In order to get the best product for the least amount of money, the quantity food buyer must know his meats—how each piece may be used and the science of good preparation. Of the seven government beef grades only two are of interest to the restaurateur; namely, choice and good. These are graded on conformation, finish, and quality. Because one of the most important single items on the Army menu is steer beef, the food buyer is going to be restricted in choice of meats. This fact behooves him to be on the alert for tasty preparation of less expensive cuts.

School Lunch. The aim of the New York City Child Nutrition Project is to feed malnourished children nutritionally adequate low-cost meals. Under the leadership of Grace Gosselin a central kitchen was organized which replaced the original 15 poorly equipped school kitchens. Second-hand trucks were purchased for distribution of food. The use of individual service was a highlight in the development of the project. The present policy is to develop menus for a 20-day cycle at a per capita food cost of 6 to 7 cents.

BAKERS' HELPER

Vol. 77, January 17, 1942

* Food and drug act as it applies to the miller and baker.—p. 99.
* Any time is hot bread time. W. E. Broeg.—p. 100.
Tasty titbits for the cookie counter. J. A. Lambeth.—p. 105.
* Modern versions of loaf cake open new markets. W. E. Broeg.—p. 110.

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* How to operate under sugar restrictions. P. A. Seitz.—p. 260.
* Sweet dough features for the lenten season. H. F. Schudlich.—p. 266.
* Suggestions for realizing potential sales. J. A. Lambeth.—p. 267.

Vol. 77, February 28, 1942

* Fermentation process conserves materials. V. E. Marx.—p. 362.

Vol. 77, March 14, 1942

* Army opens its training in American Institute of Baking building.—p. 448.

Food and Drug Act. The informative labeling section of the Food, Drug and Cosmetic Act makes 5 requirements: statement of name and location of the manufacturer or distributor; weight or numerical count of the product; common, usual name of the food; list of ingredients contained in the product; declaration as to presence of artificial color, flavor, and chemical preservatives. Special dietary labeling for those foods which claim to have or are purported to have "special dietary qualifications" becomes effective May 18. Bakers are responsible for maintaining vitamin and mineral requirements of enriched bread and for having it assayed regularly.

Hot Breads. Modern baking powders permit making stock doughs or batters that may be baked and served hot during rush periods. Impression of lightness created by small muffins and biscuits makes them more popular than larger hot breads. Formulas are given for a tea-biscuit base with oatmeal, bran, and whole wheat variations. Additional formulas are for caramel, honey malt bran, blueberry, bran, corn, Southern honey corn, and English muffins. Crumpet, griddle cake, and waffle formulas complete the list.

Loaf Cake. The continued demand for loaf cakes suggests a rejuvenation of many forgotten varieties. Heavier fruit loaves such as Madeira and Dundee cake may be yeast-leavened because of recent progress in vegetable shortening manufacture. Formulas for wine cake, chocolate fudge, old-fashioned pound cake, upside-down cakes, marble loaf, and de luxe loaf with glacé fruit included.

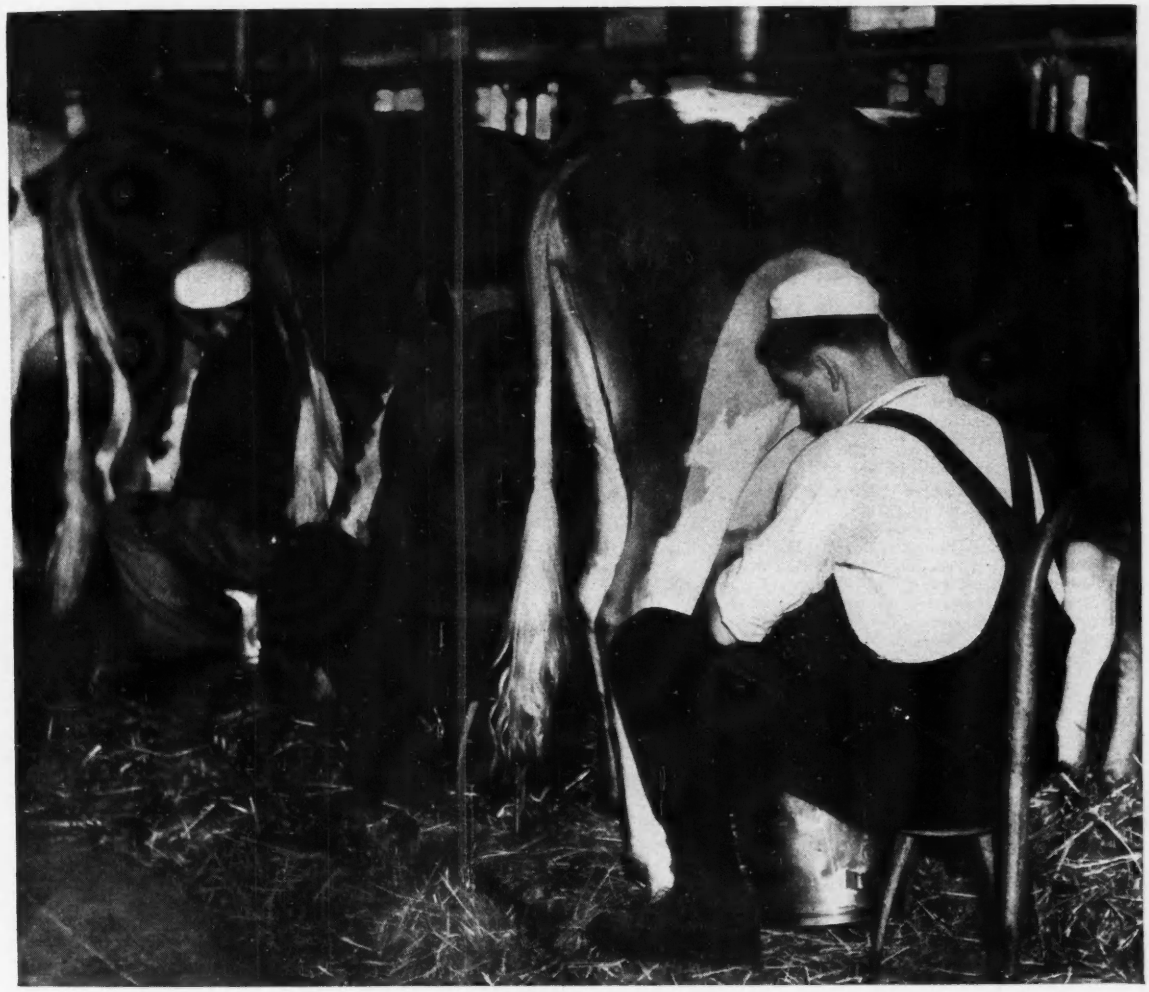
Sugar Restrictions. Bakers during February 1942 were restricted to 80% of the sugar they used in February 1941. A knowledge of recipe balance and conversion factors for sugar replacement is more than ever essential. Glucose has two-thirds the sweetening power of sugar but should be used in proportions of 10 parts sugar to 12½ parts glucose in cake products. Products baked with glucose require more careful handling both during and after baking. It is suggested that bakers divide recipes in the following manner: For recipes requiring a very high percentage of sugar, manufacture should either be stopped or prices on the finished product raised; in products where sugar is used as a sweetening agent only, its use may be lowered along with the decreased "sugar taste level" or substitutes may be used; where lessening of sugar in a recipe will destroy the balance between ingredients, no reduction may be made. Sugar may be entirely omitted in the process of bread production with the careful use of malt changing starch to sugar.

Sweet Dough. Dried fruits are very adaptable for use in baked products. Formulas are given for preparation of dried fruit as a coffee cake filler, sweet yeast coffee cake with maximum and minimum sugar and shortening content, and lenten butter-egg bread.

Low-Sugar Recipes. Baba-au-rhum and brioche popularity in peacetime Europe suggests possible opportunity for cafeteria and restaurant service in this country. The "baba" is usually served as dessert topped with whipped cream and the "brioche" as a side to fruit or vegetable salads. The brioche topped with whipped cream may be served as a dessert or afternoon snack. It is particularly variable because its low sugar content permits sandwiching with savory fillings. Formulas are given complete with finishing directions for sale.

Bread Making. Second run dough was found to produce better bread, because the sponge fermented in a mixer with a dome lid that kept sponge fairly free of the mixing room air. Evidently the gases from the sponge as they collected had an effect on the fermentation of the remaining sponge. When an air-tight fermenting room was used, with carbon dioxide liberated from a cylinder, it took 2 hours and 15 minutes sponge time at 84° F. With sponges started at 77°F., a 10° temperature pick-up gave the best bread, which proved to be superior to that made by the old method of fermentation.

Soldiers Train to Bake Bread. The American Institute of Baking has leased its school facilities, 3 bakeries, class rooms, laboratories and library, to the Subsistence Branch of the Quartermaster Corps to train key officers and enlisted men as baking instructors. The 72 soldiers in the first class are experimenting out-of-doors with the latest field oven and mixer equipment. The new field oven has gasoline burners and perfect temperature control, and can bake either the old type field formula, 4 lb., lean, long-keeping, round loaves, or the new type ration pan sheet loaves.



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FOOD INDUSTRIES

Vol. 14, January 1942

* Watch your water supply—it affects food quality. K. G. Weckel.—p. 47.
* Designs own machines to speed production. M. E. Bridston.—p. 55.
* What's known today about dehydrating vegetables. W. V. Cruess and E. M. Mrak.—p. 57.
* Polyphase freezing developed; low-cost unit built. L. H. Bartlett and W. R. Woolrich.—p. 62.
Doubles refrigerating capacity by draining ammonia lines. E. G. Applegate.—p. 64.
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* Price ceilings put on foods.—p. 75.
* Ships use lard as "refrigerant."—p. 77.
* Increase in fruit yield expected to slacken.—p. 83.
* The pepper mill returns.—p. 91.
* Washroom deodorant.—p. 93.

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* What's known today about dehydrating vegetables. Part II. W. V. Cruess and E. M. Mrak.—p. 41.
* Preventing spoilage by mold and bacteria. E. F. Glabe.—p. 46.
* Feeding of cows controls vitamin A content of butter. S. M. Hauge.—p. 48.
* Research reveals how meat shrinks. W. Heller.—p. 50.
* New packages and products.—p. 65.
* OPM places restrictions on foods and materials.—p. 67.
Vegetable and fruit skin-removing device.—p. 101.
* Distribution of salt in butter.—p. 101.
* Concentration of vitamin A by adsorption.—p. 102.

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* Army needs 13 new foods. Major J. H. White.—p. 38.
* New—nectar made from fresh prunes. M. K. Veldhuis and C. W. Eddy.—p. 46.
* How to use waste rind in processed cheese. S. Brickner.—p. 47.
* What's known today about dehydrating vegetables. Part III. W. V. Cruess and E. M. Mrak.—p. 48.
* Preventing off-flavors in dried whole milk. E. L. Jack and J. L. Henderson.—p. 50.
* Facts about caffeine, theobromine in foods. P. W. Punnett.—p. 52.
* Food jars simplified.—p. 62.
* Keeps avocados fresh.—p. 63.
* Tin conservation order hits long list of foods.—p. 65.
* Army wants only enriched flour.—p. 69.
* Protein surveys of wheat.—p. 101.
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Utilizing citrus wastes.—p. 101.
Formulas for foods.—p. 103.

Water Affects Food Quality. Flavor and color, clarity, inert chemical properties, uniformity of composition, bacteriological acceptability, availability in volume, and acceptable temperature are all factors in water supply that can affect the preservation of the fresh flavor and physical characteristics of a food or beverage. The natural chemical composition of the water and its contamination cause the most variability. Colored waters may affect the "whiteness" of solid foods or the clarity and translucency of syrups and beverages. Carbonation intensifies vegetable and water algae odors. The high temperatures used in baking may cause dissolved organic matter in water to break down and release a substance like sulfur which is responsible for the blackening of tin used in equipment. An investigation of a "limburger smell" in butter disclosed that the water used to wash the buttermilk out of the butter granules contained proteolytic organisms that had decomposed. The use of sweet milk instead of sour, and the subsequent 50% reduction of the salt used had allowed the taint to become noticeable. Cream poured into coffee brewed with hard water will form a gray film over the surface of the coffee. Exceptionally hard water may cause milk to curdle when it is added to cooked cereal. The baking quality of flour, the appearance of the bread or the color and texture of certain candies may be affected by the water used in preparation. If high-calcium water is used to standardize over-condensed evaporated milk, the viscosity of the sterilized milk may be increased to the point that reduction in sterilizing temperature or time is necessary. Undue hardness of water used in vegetable canning may cause toughness in peas and beans, but may at the same time improve tomatoes. Chlorinated waters are destructive to citrus products, and water to be used for orange drinks must be treated carefully by carbon filters.

Speed Bakery Production. A Seattle bakery has been ingeniously mechanized so that half the number of man hours turns out twice the volume of product as compared to old hand work methods. The outstanding feature in the speed-up is the use of the conveyor belt which carries the product along from machine to machine during the various processes of production. One machine, a dough sheeter, takes 25 lb. dough and converts it into thin sheets ready for shaping. Further along the belt are contrivances for cutting shapes, like "bear claws" and filling them. The cakes and sweet rolls are mechanically topped and iced.

Dehydrated Vegetables. Vegetables for dehydration should be harvested at their prime and dried the same day. The process includes: washing; sorting; trimming and peeling; slicing, dicing or shredding the vegetable; blanching; and traying. Blanching in live steam at 212°F. inactivates enzymes which might produce undesirable changes in color, odor or texture, and by pre-cooking the vegetable, aids in "refreshing" when they are soaked in water before cooking. Dehydrated vegetables should return to practically their original size and form and appearance after soaking a few hours in water. Dried vegetables have only one-fifteenth to one-fifth the weight of fresh-picked products, and if compressed before packaging, considerably less bulk. Dehydrated peas, string beans, carrots, and spinach (if not stored too long) are equal or superior in color to canned products. On the whole, dried vegetables are not equal in flavor, texture, appearance and aroma to cooked fresh vegetables and might prove monotonous if used steadily in the diet. The relative vitamin content of fresh and dehydrated vegetables has not been fully determined. Steam blanching rather than hot water blanching lessens the loss of water-soluble vitamins. Vitamin A is fairly well retained. It is thought the loss of vitamin B_1 and niacin is fairly small under rapid drying conditions. Asparagus tips dry satisfactorily. Dehydrated tomatoes have good flavor and color but do not return to their original form and size on soaking.

Polyphase Freezing Unit. The University of Texas' polyphase freezing system includes a standard refrigerating unit and a machine which brings the polyphase medium in contact with the foodstuff and also separates the two after freezing is completed. While the food is in contact with the polyphase fluid a circular oscillation superimposed on the normal rotation of the conveyor tube tends to remove the fluid film and ice crystals that form on the surface of the refrigerated surfaces. The food floats freely in the medium, thus avoiding crushing and making the freezing more uniform. After moving through the conveyor tube the frozen food is dropped into a discharge compartment and the polyphase fluid is piped back to the feed chamber. The unit has a minimum weight of 700 lb. for 50 to 100 lb. per hour freezing capacity, and takes up an 8 by 12 ft. floor area space. All parts are fabricated from standard pipe, welded fittings, helicod conveyors, and structural shapes. Excluding the power for refrigeration, the small unit is driven by a ¼ H.P. motor. It requires a small heat transfer medium and a small insulated area—70 sq. ft. for the large unit which weighs 3500 lb. All vertical dimensions are less than 7 ft. Any food which permits free drainage of the fluid may be advantageously frozen.

Price Ceilings. Temporary price ceilings for green

Surgical Recovery

IS LARGELY A MATTER OF NUTRITION

The reparative processes which come into play after surgery are largely dependent upon nutritional essentials for their successful operation. This mechanism is reflected in the increased requirements of many nutrients during the recovery period. Unless these needs are met, convalescence is retarded and strength fails to return normally.

The nutritional advantages of New Improved Ovaltine can be utilized as soon as the patient can tolerate a "light soft diet." Containing generous quantities of many essential nutrients needed during the postoperative period, this delicious food drink aids measurably in satisfying protein, mineral, and vitamin requirements. It is more easily digested than milk itself, hence is assimilated with a minimum of digestive effort.

Three daily servings (1½ oz.) of New Improved Ovaltine provide:

	Dry Ovaltine	Ovaltine with milk*
PROTEIN	6.00 Gm.	31.20 Gm.
CARBOHYDRATE	30.00 Gm.	66.00 Gm.
FAT	3.15 Gm.	31.95 Gm.
CALCIUM	0.25 Gm.	1.05 Gm.
PHOSPHORUS	0.25 Gm.	0.903 Gm.
IRON	10.5 mg.	11.9 mg.
COPPER	0.5 mg.	0.5 mg.
VITAMIN A	1500 U.S.P.U.	2953 U.S.P.U.
VITAMIN D	405 U.S.P.U.	432 U.S.P.U.
VITAMIN B_1	170 U.S.P.U.	302 U.S.P.U.
RIBOFLAVIN	0.25 mg.	1.28 mg.

*Each serving made with 8 oz. milk; based on average reported values for milk.

NEW IMPROVED

Ovaltine

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Ovaltine now comes in 2 forms—plain, and sweet chocolate flavored. Serving for serving, they are virtually identical in nutritional value.

• • •

Dietitians are invited to send for a supply of individual servings of New Improved Ovaltine. The Wander Company, 360 North Michigan Avenue, Chicago, Illinois.

coffee, pepper, cocoa beans and cocoa butter were established on the prevailing prices of December 8. On Dec. 13, a ceiling price for all fats and oils, except butter, was established on prevailing prices of November 26.

Lard as Refrigerant. A shortage of refrigerated space on ships prompted the use of lard as a thermal insulator. Technicians lined a chamber constructed to simulate ship-hold conditions with 56-lb. boxes of frozen lard and stored meat frozen to below zero temperature within the lard-lined room. At the end of 3 weeks, the stored meat remained frozen solid. A subsequent shipment to Britain of mild-cured ham and pork, insulated by frozen lard, arrived in perfect condition.

U. S. Fruit Yield To Be Less. In the 10-year period, 1930–40, fruit production increased greatly—oranges 60%, and grapefruit fourfold. Figures indicate that the numbers of trees planted and not yet bearing must mean a slackening in all fruit production over the next few years.

Spices. Waldan Greenery in New York believe that freshly ground spices improve the flavor of foods so much that they are introducing a small pepper mill 3 in. high made of oak with chromium trim and are selling peppercorns in glass bottles to go with the mills.

Washroom Deodorant. Oakite Products Inc., 26 Thames St., New York City, has developed a dry, white, free-flowing powder which has deodorizing, detergent and disinfecting properties combined. It is odorless in itself, neutralizing odors rather than covering them up with another odor. It is used in proportions of 1½ oz. per gallon cold water.

Dehydrating Vegetables. This is the second in a series of three articles dealing with types of dehydrators and principles of dehydration. Of the two classes of dehydrators used, air dryers and vacuum dryers, the former is cheaper but less efficient than the latter. Air has two main functions in drying: namely, to carry heat to the product and to carry away the moisture evaporated from the product. The amount of heat required varies proportionately with the amount of moisture in the fruit or vegetable. The greater the velocity of air passing through the drying trays, the greater the speed of drying. A rise of temperature in the air to a certain point has very favorable effects as it increases the moisture-carrying power of the air and decreases its relative humidity. However, toward the end of the drying period too high a drying temperature can be injurious to the sugars and other constituents, as the moisture of the product no longer comes to the surface to maintain rapid evaporation. It is interesting to note that vegetables must be dried to a much lower moisture content than fruits for satisfactory keeping qualities due to the fact that they have a much lower ratio of water-soluble solids.

Mold Preventatives. Air-borne mold infection finds a ready medium for growth in bread as it is moist and contains carbohydrates and proteins. Most objectionable is the *Bacillus mesentericus* or "rope," which gains entrance almost entirely through the ingredients. Two of the most satisfactory inhibitors yet discovered are proprionates and sodium diacetate. Ultraviolet light is being used to kill mold spores on the surface of bread.

Vitamin A Content of Butter. The amount of vitamin A in butter depends upon the vitamin A and carotene content of the cows' feed. Seasonal variations in feed are a contributing factor, *i.e.* the vitamin A content is low in the winter time and reaches a maximum in the spring when the new grass contains an abundance of carotene. Different breeds fed upon the same rations produce butter with very similar vitamin A potency. However, vitamin A content varies with amount of butter fat produced by the various breeds. The most important factor affecting the vitamin A content of the butter is the carotene content of the rations fed the cows, but the bright color produced by an abundance of carotene is not a true guide as other precursors of vitamin A present in the diet also impart color. Then, too, color is not always a guide to quality for experiments prove that butters containing equal amounts of carotene vary in their vitamin A content.

Meat Shrinkage. Shrinkage other than from loss of fat is due to the evaporation of water from the surface area of a piece of meat and loss of weight is proportional to the surface area.

New Packages and Products. S. and W. Fine Foods, Inc., is producing "liquid apple," a creamy white apple juice containing a large proportion of the apple in a finely divided form. By the use of a two-stage Schwartz extractor the juice is deaerated, flash pasteurized, filled into cans, sealed, sterilized and chilled. It is available in 12-oz. and 47-oz. tins. Angelica Foods, Inc., has made "pralined" beans one of its specialties. They are prepared with pea beans, molasses, beef suet, sugar, and salt, and cooked Southern style in small individual pans. A new $1,500,000 plant is being built by Citrus Concentrates, Inc., to meet an expanding market for its "Sunfilled" pure concentrated orange juice and grapefruit juice. The fruits are deaerated but not pasteurized and the juices are free from any added flavoring, coloring, sugars, or preservatives.

OPM Restrictions. On January 7 the ban on the use of transparent cellulose was extended to include bottled beverages such as alcohol and extracts, bottled foods such as sauces, salad dressings, fruit juices, pickles, olives and preserves, and canned foods of all sorts. The prohibition of the use of tin cans for coffee is foreseen. Prices of fats and oils, coffee, and peppermint have risen considerably in the last two months. Manufacturers of glass have been asked to simplify sizes, shapes, and finishes of bottles so as to conserve that product. Deliveries of sugar to industrial plants have been restricted by the OPM to the rate which prevailed in 1940.

Salt Distribution. Experiments show that bacterial growth is greater in butter with uneven salt distribution than in well-worked salted butter. While salt retards bacterial growth, when its concentration is not even throughout a product its strength as an inhibitor of bacterial spoilage is weakened.

Vitamin A Adsorption. Experiments are under way to determine whether or not vitamin A may be concentrated from liquids in which it occurs in small amounts by the use of adsorption; 10 of 71 materials examined might be used: namely, calcined alumina, calcium hydroxide, tribasic calcium phosphate, infusorial earth, basic magnesium carbonate, salicylic acid, sodium benzoate, sulfate and sulfite, and powdered sugar.

Army Foods. The Army needs 13 new foods in order to vary the soldier's diet and improve his well-being and morale: 3 additional meat items for the field ration Type C, a different item for the veal or pork luncheon meat in the Type K ration, liver product, improved sterile canned hams, better prepared canned pork sausage, roast beef of better flavor and consistency, eggs incorporated with other foods in canned items, canned chicken and turkey for hospital use with a high percentage of broth, sterile canned whole milk without overcooked taste of evaporated milk, spread for bread to be used by expeditionary forces with a higher melting point than butter or oleomargarine and packed in tin, partially dried meats in containers other than tin, rations for use in extreme cold, a 10-ration package to simplify distribution of rations at division distribution points.

Prune Nectar. Prune nectar is a new pulpy drink that provides an outlet for cull prunes at economical manufacturing costs. Only sound fruit will produce a satisfactory product. The production processes are sorting of fruit, washing, pitting, cooking to extract color, pulping, mixing with syrup, filling containers, and processing.

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The tasty meat-like flavor of Vegex is best appreciated when it is used as directed—diluted and in small quantities. It may be added to the diet in a variety of ways, a few of which are as follows:

Vegex Bouillon

From one-half to a level teaspoonful of Vegex to a cup of hot water or the water in which vegetable were cooked. Try adding a dash of lemon to Vegex bouillon and thoroughly chill.

Vegex-Tomato Juice Cocktail

Dissolve from one-half to a level teaspoonful of Vegex in a little warm water and add to a glass of chilled tomato juice.

Vegex Butter

Cream together 1 part of Vegex with 10 to 12 parts of butter for sandwiches, toast, baked potato, macaroni and vegetable dishes.

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Waste Rind. Up to one-third of a cheese batch may be made up of rind without impairing the desirable qualities. The rind must be reduced to a fine powder by a special type of hammer mill. In this type of cheese a higher overrun is possible because of the low moisture content of the rind. Another use for rind is as a base for the manufacture of grated cheese.

Vegetable Dehydration. Specific directions for preparing and drying the following vegetables are given: asparagus, globe artichokes, beans, broccoli, beets, Brussels sprouts, cauliflower, cabbage, carrots, celery, celery root, chayote, corn, egg plant, garlic, horse beans, and kohlrabi. A chart with additional vegetable procedures includes form for drying, blanching, maximum finishing temperature, and maximum moisture content.

Dried Whole Milk. Dried whole milk usually develops a tallowy flavor because of fat oxidation within 60 to 90 days after manufacture. By carefully controlled processes such deterioration can be avoided for storage periods of as long as two years. Preparation of the liquid milk at preheating temperatures of 175°F. for 15 minutes using the atmospheric roller dryer process is essential for these results.

Caffeine, Theobromine. Ignorance of the physiological action and the occurrence of caffeine in foods and beverages is responsible for the many prejudices against caffeine-containing products. Comparative data on the amount of caffeine in various foods show that almost every person frequently consumes foods that contain caffeine and theobromine with no apparent ill effects. Tables are given to show the amount of caffeine and theobromine in foods and the solubility of theobromine.

Food Jars. The Bureau of Standards is working out a simplification process to eliminate odd sizes and shapes of jars. This was made necessary by the present heavy demand for glass jars and limited raw material supply and manufacturing capacity.

Avocados. A new transparent cellulose wrapper permits enough air to reach the avocado to keep it in perfect condition during shipment. The cellulose also retards the too-rapid ripening which takes place when the fruit is brought out of storage, and helps to retain the bright green skin color until fully ripe.

Tin Conservation. Canned foods which may still be packed in tin are listed. Those banned include coffee, beer, dog food, dried beans, pork and beans, baking powder, cereals, flour, spices, and condiments. Canners are directed to concentrate on the use of larger size cans, to substitute other containers for tin, and to use a minimum amount of solder with a minimum amount of tin content to seal cans.

Enriched Flour. The Army has announced that it will purchase only enriched flour, which puts the Army in a competitive position with commercial bakeries and civilian consumption for the limited amounts of enriched flour available.

Protein Surveys. In the spring wheat areas, protein content of the crops increases in progressing order from eastern to western reaches. This is not true, however, in all seasons. Variability in the protein content of hard spring wheat is twice as great as that of the soft red winter wheat. Rainfall is a prominent climatic factor influencing protein content of the crop.

FOOD RESEARCH

Vol. 7, January–February 1942

* Staphylococci and salmonella control in foods. I. Effect of ultra-violet radiation and ozone on bakery custard and cream fillings. W. H. Cathcart, R. E. Ryberg and A. Merz.—p. 1.
* Staphylococci and salmonella control in foods. II. Effect of pure fruit fillings. R. E. Ryberg and W. H. Cathcart —p. 10.
* Effect of processing on carotenoid (provitamin A) content of peaches. D. DeFelice.—p. 16.
* Nature of darkening of cooked potatoes. H. W. Nutting and M. C. Pfund. —p. 48.
Production of staphylococcus enterotoxin in canned corn, salmon, and oysters. E. Davison and G. M. Dack.—p. 80.

Staphylococci and Salmonella Control. Ultraviolet rays (2000 to 2950 Å units) effectively reduced the counts of *Staphylococcus aureus* and *Salmonella enteritidis* in the air and on smooth surfaces, but would not penetrate the surface of custard products. An off-aroma was found to be present in custard products exposed to these lamps for two hours or more. Ozone was ineffective in helping to control staphylococci and Salmonella bacteria in custard and cream fillings. The type of off-aroma and taste developed in the products by the ozone is the same as that developed by ultraviolet radiation.

Staphylococci and Salmonella Control. The growth of both *Staphylococcus aureus* and *Salmonella enteritidis* was found to be effectively inhibited in lemon, orange, pineapple, apricot and strawberry pure fruit fillings of the formulae given in this paper, the inhibitory action being greater on the Salmonella than the staphylococci. The degree of inhibition seemed to be at least partially controlled by the *p*H of the filling. The addition of ingredients such as milk, which may exert a buffering action on the fruit acids, reduces the inhibitory action.

Effect of Processing on Provitamin A. Frozen sliced peaches and frozen peach pulps of five varieties were shown to contain approximately 75% of the vitamin A potentially available in the whole fresh peach. Chemical determination of vitamin A precursors before and after six months of freezing storage showed no significant changes in pulps. Studies of frozen pulps from several varieties of peaches sweetened with sucrose showed no significant variation in retention of the vitamin A potency over a storage period of six months.

Darkening of Cooked Potatoes. The blue-black diffuse stem discoloration of cooked potatoes, designated as "blackening," is the result of an oxidation. Blackening was markedly decreased or prevented by the use of cooking waters of *p*H 4.1 to 4.9, but a tough layer was formed on the outside of the tuber.

HORWATH HOTEL ACCOUNTANT

Vol. 22, March 1942

* Food cost control.—p. 2
* How to meet higher costs. J. E. McNamara.—p. 5.

Cost Control. Rising prices have made food cost control more important than ever. Small restaurants as well as the large should obtain the following information daily: cost of food purchased and delivered to preparation centers, cost of food purchased and delivered to store-room, cost of food withdrawn from store-room and delivered to preparation units. Recorded in columnar form, these data enable the small operator particularly to keep a close check on food cost.

Higher Costs. Stricter business methods and closer control adopted during this period of general disruption should be continued after the war. Food costs vary with the type of business concerned but if it is higher than 50% not much profit can be made. Several factors causing cost variation are difference in dish demand, menu variety, size of breakfast sales, banquet business, number of employee meals, elective price plans, specification purchase of merchandise, and food control methods. Adequate records include subdividing operations into the various production units with the cost per dollar sale determined for each of these as well as the items each prepare. When costs are out of line the cause can thus easily be located. It is of prime importance to feature profitable items that really sell,

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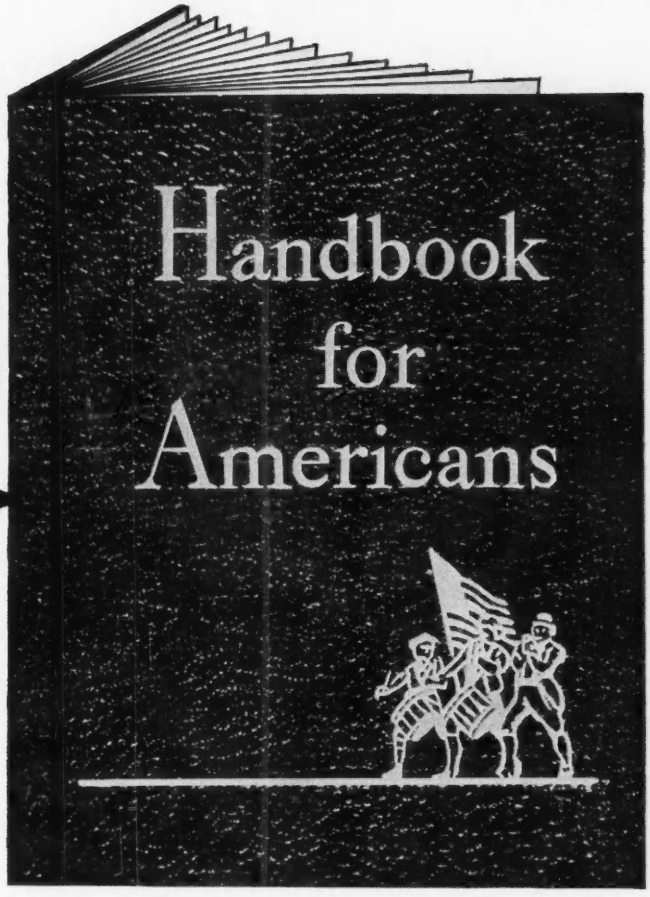

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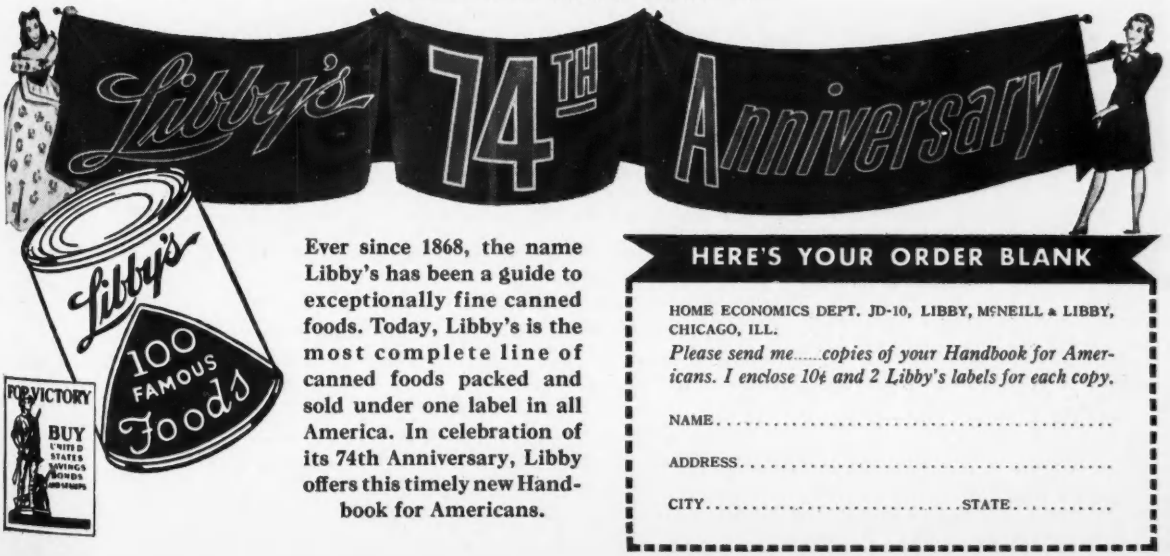

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using salesmanship on those that do not sell themselves. The most important records to be kept in the restaurant business are purchase specifications, standard recipes, standard portions, production records, and records of sales by portions.

HOTEL MANAGEMENT

Vol. 41, January 1942

* How to make better coffee.—p. 37.

Vol. 41, February 1942

* Yours for cleaner dishes.—p. 39.

Coffee. Directions are given for making coffee in urn bags and glass coffee makers. The 13 points to be observed in making urn bag coffee are: have correct amount of weighed dry coffee on hand; use correct grind of coffee; have plenty of fresh boiling water in hot-water urn; have plenty of near-boiling water in jacket of coffee urn; have coffee urn clean and in proper condition; rinse fresh bag in cold water and put in urn; put correct amount of dry coffee in urn bag; have water in hot water urn boiling; heat measure by rinsing with hot water; rapidly draw correct number of measures of boiling water and put through coffee using a circular motion and keeping urn cover down between measures of coffee; repour coffee using hot measure and repouring 1 gallon more than the number of gallons made at brewing; allow to set 5 to 10 minutes before serving; and remove the urn bag and coffee grounds 10 to 15 minutes after coffee has been finished.

Cleaner Dishes. The first step in the dishwashing process consists of spraying with warm water containing a detergent for 30 to 45 seconds at 140 to 150°F. in single tank machines. The second step requires exposure of dishes in the rack to water at least 180°F. under pressure of from 25 to 50 lb. Rinsing takes from 10 to 15 seconds. Frequent check on the strength of the wash solution is essential for both adequate washing and drying.

HOTEL MONTHLY

Vol. 50, February 1942

Buffet cafeteria service for luncheon clubs.—p. 40.
* Celtuce, the new vegetable.—p. 52.

Celtuce. Celtuce appeared on the market the first of this year, but is not as yet widely available. It is a cross between celery and lettuce and combines the flavor of both. The stalk of celtuce is eaten after the skin is removed, stalk sliced lengthwise and cut into small pieces. It may be eaten raw in salads or cooked and served like asparagus, or used in soup.

ICE CREAM TRADE JOURNAL

Vol. 38, January 1942

* Ice cream tarts. V. M. Rabuffo.—p. 10.

Vol. 38, February 1942

* Industry case opens at standards hearings.—p. 14.

Ice Cream Tarts. Ice cream tarts have recently appeared on the market and are creating new horizons for ice cream sales. The tart consists of a base of vanilla ice cream with a topping of raspberry fruit and a rim of whipped cream. Tarts contain $4\frac{3}{4}$ to 5 fluid oz. of mixture each and retail at 10 and 15 cents.

Standards Hearings. The government will strive for a minimum of 12% fat for plain and 10% for chocolate, fruit and nut ice cream, together with a ban on neutralizers, a minimum of 20% peaches, 15% of other non-citrus fruits and oranges, 5% lemons and limes and 6% of nuts in frozen desserts flavored with these ingredients; the prohibition of the use of any artificial or natural flavor to fortify fruit or nut flavors in conjunction with fruits and nuts; and the declaration of "artificial flavor" on the label of the package when vanilla is fortified with vanillin.

JOURNAL OF HOME ECONOMICS

Vol. 34, January 1942

* Cross-educating the residence hall staff. E. C. Gibbs.—p. 17.

Vol. 34, February 1942

* Food management for organized groups. A. B. Marsh.—p. 100.

Vol. 34, March 1942

* Family finance in wartime: home economists' responsibilities. J. V. Coles.—p. 149.
Home economists and emergency war measures in Honolulu. K. Bazore and M. Weaver.—p. 155.
Unemployment insurance for the household worker. B. Ellis.—p. 161.
A health class paves the way for a community program. E. Riner.—p. 166.
A quart for a nickel. S. F. Adelson.—p. 174.
* Vitamins—victuals—victory! K. M. Kohler.—p. 177.
War demands for trained personnel. C. F. Shouse.—p. 181.
* Price control.—p. 185.
* Effect of tea on energy metabolism of children. J. Whitacre.—p. 187.

Residence Hall. Students in the field of institution management preparing for positions in residence halls should be required to take at least one course in guidance or student personnel administration. Students who major in the field of student personnel administration should take a course in institution management or business administration. Those who plan to go into residence hall work should have at least a three-point field course concerned with all problems of residence hall work. Cross-education should always start with the training of graduate students for administrative positions in residence halls.

Feeding Organized Groups. The Department of Home Economics at the University of Nevada is meeting a definite need in developing a course, Food Management for Organized Groups, which is being eagerly attended by lay men and women who are responsible for feeding organized groups, such as fraternity or sorority houses, summer camps and nursery schools. The course is offered for credit and conducted at the college level according to college standards. Nutrition and the planning and preparation of adequate, appetizing meals form a main part of the course.

Wartime Responsibilities. The effects of World War I on incomes, taxes, availability of foods, and the family in general are being reproduced in this war period. Purchasing power is soaring, but so are the goods to be purchased. People are spending foolishly instead of saving for the terrible economic depression which will doubtless be a result of the war. In such a situation the job of the home economist is on the second line of defense—with families in their homes. She must adjust her teachings to the economic level of the community in which she is working and then go into homes and show mothers how to use substitute foods, how to have a nutritionally adequate diet on a limited budget, how to make and keep expense budgets, and how to make clothes, thus helping to establish a strong and solid home front without which we can never be victorious.

Health Forums. Minneapolis has been the scene of health forums conducted by the Adult Education Department of the public schools. Problems discussed include a nutritionally adequate diet, wise purchasing, adequate and inadequate menus from the standpoint of vitamin content, and general healthful living. Poster displays have proved a source of interesting and helpful illustrative material.

Price Control. The value of the Price Control Act will depend upon the degree to which there is rationing of food. This year will probably see the rationing of not only single items but groups of items. The act is a compromise and

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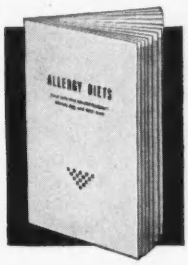
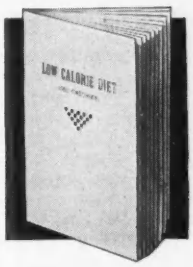


Complete Allergy Diets

All ready for use. Lists allowed and forbidden foods. Includes tested recipes for wheat, milk and egg-free diets. Made without wheat, milk or eggs, Ry-Krisp is a safe bread for those allergic to one or all three of these foods. Request diets on coupon.



Simple Low-Calorie Diets

Dietetically sound. Widely used by doctors. 1700-calorie diets for men, 1200-calorie diets for women. Ry-Krisp indicated as bread because it has only 23 calories per wafer yet has a high hunger-satisfying value, provides bulk to aid regularity. Diets on request.

Eat Whole Grain Bread Regularly Is Advice of Nutrition Experts

Ry-Krisp is an out-and-out whole grain bread. Yields 7 International Units vitamin B_1 per 6.5 gram wafer, is a good source of iron, copper, phosphorus, manganese. A handy, delicious bread for everyone. Made of pure whole rye.

RALSTON PURINA COMPANY, 956D Checkerboard Square, St. Louis, Missouri

Please send____copies Low-Calorie Diets and____copies of Allergy Diets. No cost.

*Name*_____

*Address*_____

*City*_____ *State*_____

(Offer limited to U. S.)

will not prevent us from a speculated 15% rise in the cost of living in 1942.

Tea. An experiment on effects of tea on basal metabolism of 15 child subjects from 10 to 13 years old resulted in the conclusion that caffeine in moderate-strength iced tea causes little if any rise in oxygen consumption. Consumption by children of tea in this form is not harmful in itself—only when such tea replaces milk and fruit juices.

NATION'S SCHOOLS

Vol. 29, March 1942

* Hot lunches for all help to solve health problems. F. Hayes.—p. 24.
* Nutrition in defense. R. E. Landis.—p. 62.
Recipes utilizing surplus commodities. C. Hart.—p. 64.

Hot Lunches. Malnutrition became general among the school children of Clinton Township, Indiana, particularly during the last 10 years. This district has the highest percentage of families dependent on relief in the United States. In the late thirties a hot school lunch program was set up in the five elementary schools of the community. Present results show that more than 70% of the children taking advantage of the program record definite weight gains. Families who can afford it pay 25¢ or more each week for each child or donate the equivalent in food. There has been no problem created by parents who can afford to pay demanding free lunches for children.

Nutrition in Defense. Producers, distributors, and consumers must combine efforts in a campaign against malnutrition and waste. The improvement of national health is a responsibility of education and every American must learn to eat properly and buy wisely. Davis High School, Mount Vernon, New York, undertook the project of making "every pupil and faculty member nutrition conscious" by having nutrition bookmarks and posters printed, analyzing market orders, encouraging the use of low-cost meals, using left-overs, and preventing waste. Teaching devices include posters, films, exhibits, student shoppers, family food guide sheets, reference libraries, and a school cafeteria with posters encouraging proper dietaries.

RESTAURANT MANAGEMENT

Vol. 50, March 1942

* Sugar should be saved for Uncle Sam.—p. 10.
Menu profits clinic—desserts.—p. 31.
* How to reduce your costs.—p. 37.

Save Sugar. Save sugar with coffee service: no sugar on tables, ask guests if they desire sugar, take sugar bowl to table as coffee is served, place two wrapped sugars on saucer of every cup of coffee, a teaspoon of granulated sugar in a paper cup with every cup of coffee. To reduce sugar consumption in food preparation: fruit salads as desserts using sweet fruits such as dates, figs, oranges, or fruits canned in heavy syrup; plain rather than sugared doughnuts; eliminate French and Danish pastries; ice cakes on top only, use meringue instead of icing on top of cake, use jelly and jam in place of icing; list more fruit and gelatin combinations or puddings with fruit on menus; discontinue service of free mints and candies; eliminate sweet petits fours; reduce consumption of sponge cake (32% sugar) and angel food cake (42% sugar); omit desserts from table d'hote; issue 20% less sugar to departments and let them make it go around; reduce dessert listings—especially very sweet items.

Reduce Costs. Hundreds of restaurants are now using the "We Save for Uncle Sam" campaign. It works this way: Each employee signs the personal pledge and receives a red, white and blue button and folder explaining the plan. The folder is also used for dining room tables. Each employee is given a copy of the particular poster that concerns him (fountain service, bus-boys, cooks, linen room) and another is posted in his department. Each poster is 8½″ by 11″ in size, and priced at 6 for 25¢ for each lot of 12 or more. There are 36 different subjects treated by the posters.

AVOIDANCE OF DEGENERATIVE LESIONS IN DIABETES MELLITUS

We have concluded from our study of diabetic children that adequately controlled diabetes mellitus does not predispose the child to degenerative diseases or to disturbance of growth. The children who have presented such abnormalities have shown concomitantly prolonged glycosuria with accompanying perversions of their normal physiologic state. The inadequacy of the regimen in these subjects could not have been established through their freedom from outstanding symptoms or from early physical signs of abnormality. If we were to have waited to verify the adequacy of management until physical signs had become apparent, irreparable damage frequently would have resulted. The evidence presented supports the premise that degenerative sequelae of diabetes mellitus represent late results of compromise levels of diabetic control, that they can be anticipated in the patient whose regimen of diabetic control or of diet falls appreciably short of physiologic levels, and that they can be prevented through the maintenance of suitable standards of management.—*Julian D. Boyd, M.D., J.A.M.A., 118: 695, 1942.*

LIKE GOLD!

HEAVY WARTIME DEMANDS

have curtailed the available supply of pure crystalline Vitamin C

Safeguard your patients by ordering V-C-B today to assure adequate administration of Vitamin C in any emergency.

At any moment we may be forced to turn down orders and we recommend that our customers anticipate their future needs. In estimating quantities, bear in mind that it may soon be impossible to rely on obtaining fresh fruits for essential Vitamin C in daily diets. V-C-B, hermetically sealed, oxygen-free, keeps indefinitely; requires little storage space.

V-C-B is a water soluble powder, which, when dissolved as directed, produces a pleasant fruity beverage approximating the caloric value and Vitamin C potency of fresh orange juice. The standard cost is only 54¢ a gallon, of which a 4-oz. liquid portion provides individual daily requirements (1000 International Units) of Vitamin C and 50 calories. Valuable also for fortifying fruit juices and beverages with Vitamin C.

V-C-B is economical: one standard No. 3 can contains approximately the same Vitamin C as 1/2 crate of oranges, and requires only 1/32 the amount of storage space. V-C-B is always fresh; there is no spoilage or waste; and it eliminates the time-wasting job of squeezing large quantities of oranges.

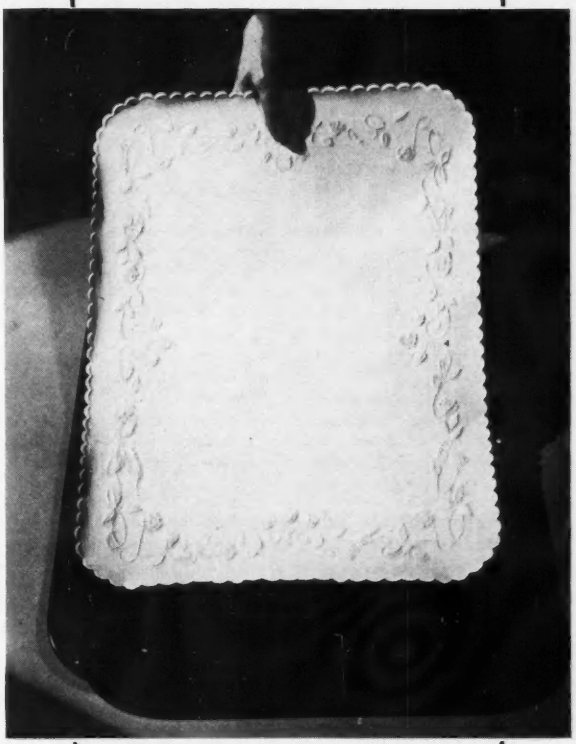
V-C-B and all advertising claims for it are accepted by the Council on Foods of the American Medical Association. Because of its recognized advantages many State Institutions have adopted V-C-B as a standard for administering Vitamin C. These institutions are saving hundreds of dollars yearly with V-C-B. Similar savings can be brought about in your institution through use of V-C-B. If you have not tried V-C-B, send for free sample and complete information TODAY.

VITAMIN PRODUCTS DIVISION
HILKER AND BLETSCH COMPANY
614 West Hubbard St., Chicago, Ill.

Please send, free of charge, 3½-ounce sample of V-C-B (makes 1 quart of Vitamin C Beverage).

Name.....
Street.....
City..... State.....

LAY THIS on YOUR TRAYS *for Added* APPETITE APPEAL



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LACE PAPER TRAY COVERS

Patients admire the crisp, delicate beauty of Milapaco Lace Paper Tray Covers—helps them to renewed appetite. Save time, serving costs, linen, too, for Hospitals! Order from your Jobber—and remember Milapaco Souffle Cups, Shallow Jelly Dishes, and Tumbler Covers.

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Established in 1898

News Notes

Placement Bureau Announcement. It is requested that all dietitians for whom $100 a month and maintenance or $125 a month and maintenance would be an advancement write to the Placement Bureau, American Dietetic Association, 185 North Wabash Avenue, Chicago, stating salary desired and listing recent references. The Placement Bureau would also like to hear from dietitians with hospital background, now employed, who will be available this summer, and salary desired; also information about hospitals which will need relief dietitians for the summer.

"Dietetics as a Profession" Now Available. Published by the Association, with a foreword by Mary I. Barber, this booklet, which is designed for use as a vocational guide in high schools and colleges, answers the following questions: Who is a dietitian? Where are dietitians employed? How do dietitians obtain positions? What are the conditions of work? What are the personal qualifications of a dietitian? The appendix includes a selected bibliography, a definition of "accredited" as used by the Association in reference to colleges, and minimum qualifications for nutritionists in health agencies. Copies may be obtained from The American Dietetic Association (address above) at 10 cents each.

American Home Economics Association. The thirty-fifth annual meeting of the association, in Boston, June 21–24, will be "a working convention for putting state associations and the national organization on an all-out wartime footing." It will also celebrate the 100th anniversary of the birth of one of the founders of the association, Ellen H. Richards, pioneer home economist, and for years a teacher of chemistry at the Massachusetts Institute of Technology. The association, founded in 1908, has grown to a membership of over 14,000. Convention headquarters will be the Hotel Statler. Dr. Gladys Branegan, dean, Division of Household and Industrial Arts, Montana State College, Bozeman, is president of the association; and Mrs. Dora Lewis, head, Department of Home Economics, New York University, is chairman of the program committee.

May 12, National Hospital Day. A supplement to April *Hospitals* lists several suggestions for the observance of this day. Among these, two concern the dietitian: It is suggested that a series of charts or trays be set up illustrating proper diets, among other exhibits; and that the dietitian be prepared to give lectures "on diets and pass diet sheets for education and gaining weight."

A.D.A. Donation to American Red Cross Field Unit Received. In a letter to Ruth Kahn, St. Louis, under date of March 3, Charlotte Raymond, American Red Cross-Harvard Field Hospital Unit, writes: "Will you extend to the American Dietetic Association, the St. Louis group and the Baltimore people my deep thanks for the check which reached me safely. I had some trouble cashing it but eventually the American Red Cross in London took care of it for me. The money is now in the safe, awaiting Dr. Gordon's return from America. When we learn what we still lack for equipment after this trip home I shall let the group decide what we most want. When the money has been spent I shall let you know just what it was used for.

"I had hoped to be home to join you all at the next A.D.A. convention but the Red Cross has asked me to stay on indefinitely. Hence I shall be with you only in spirit. . . . Greetings to you all and most grateful thanks."

Defective Issues of March Journal. The turnover in civilian organizations was perhaps directly responsible for the fact that a few copies of the March JOURNAL were mailed with missing pages. The press has asked that all defective copies be mailed to them for replacement. Address copies to The Waverly Press, Inc., Mt. Royal and Guilford Avenues, Baltimore, Maryland.

Institute of Food Technologists Convention. "Conserve for Victory" will be the theme of the third annual meeting at the Nicollet Hotel, Minneapolis, June 14–17. The program for the opening session includes: "The Role of Food Technology in War," Lt. Col. Paul P. Logan, Quartermaster Corps; "Review of Recent Developments in Food Technology," Dr. R. C. Newton, vice-president, Swift & Company; "Food Technology—Vital Factor in National Conservation," Dr. E. H. Harvey, director of research, Anheuser-Busch, Inc.; "War Problems in Food Stock Pile Storage," Dr. J. C. Drummond, chief scientific adviser, British Ministry of Food. Other subjects to be discussed include: "Industrial Sabotage" and "Educational Requirements of Food Technologists."

Nutrition Literature Used in Texas. Requirements of the Texas Food Standard, mentioned in the article by Jessie Whitacre in the April issue of this JOURNAL, are stated in a 3 by 5-inch printed blue folder and listed in terms of daily, weekly, and yearly needs. The folder was prepared by the Texas State Nutrition Committee and issued by the Homemaking Division, State Board for Vocational Education. Another leaflet, issued by the Extension Service, Texas A. & M. College, states the requirements of the Texas Food Standard and carries several photographic illustrations showing growing, harvesting, preserving and serving local farm products. The large 8½ by 11-inch booklet entitled "Better Meals for Less Money" is also issued by the Homemaking Division and contains several low-cost diets, including some of Dr. Whitacre's, together with marketing lists and recipes for preparing some of the dishes. Costs per person per day are featured and suggestions are made for improving the diets with the spending of stated small additional amounts.

New Studies in Nutrition. Three newly designated studies under fellowships in nutrition recently awarded to

We asked for Criticism and Got ORCHIDS

Golden Dipt was submitted to a group of prominent dietitians—all members of their local society—for criticism. Back came the answer: "Nothing to suggest; Golden Dipt has every quality you claim."

A NEW BREADING MIXTURE THAT TAKES THE STIGMA OFF FRIED FOODS

FRIED foods can now have a place on dietary menus, thanks to Golden Dipt. When prepared the Golden Dipt way they are free from objectionable greasiness because Golden Dipt resists grease absorption so effectively — even when fried in deep fat — meats, poultry or seafoods are as digestible as though they had been baked.

Foods breaded with Golden Dipt literally steam in their own juices. Golden Dipt not only seals in the juices but keeps out the cooking oil or fat, improving flavor and nutritive value. In addition you get the resulting tender, golden brown crust—a welcome improvement over old-fashioned breading.

Golden Dipt Saves 50% of Your Breading Cost

Golden Dipt contains all of the necessary ingredients — eggs, milk and seasoning — ready to use. Nothing to add. No mess, bother or dirty dishes. No time lost in mixing batters. No left over batches to spoil. Golden Dipt, with all its dietary advantages and convenience, costs only half as much as kitchen-made breading. The saving of cooking oil is an important plus value, particularly in deep fat frying.

Mail the Coupon for a Generous **FREE SAMPLE**

Golden Dipt READY-MIXED BREADING

PERFECT RESULTS IN ONE OPERATION

Meletio Sea Food Co.
Golden Dipt Division
822 North Broadway
St. Louis, Missouri

Please send me a liberal sample of Golden Dipt.

My Name .....

Address .....

Name of Organization .....

American universities by Swift & Company include one at the University of Wisconsin under the direction of Drs. E. B. Hart and C. A. Elvehjem of the Department of Biochemistry. They will study two B-vitamin factors—biotin and an unnamed substance termed the "norite eluate factor" from the process by which it is isolated. At Columbia University, Drs. H. C. Sherman, A. W. Thomas, and M. L. Caldwell will study the effect of adding phosphorus and riboflavin to diets already adequate in these respects and having a protein enrichment also. The third study will be conducted by Dr. H. J. Almquist at the University of California who will work on nutritional benefits of the lesser known amino-acids.

Reading List of Nutrition Articles, prepared by Rebecca Hubbell for the Connecticut Nutrition Committee and reproduced for release by the Office of Defense Health and Welfare Services, includes the following: "Common Foods Are Best," by Herman N. Bundesen, in the February *Ladies Home Journal;* "Food for a Longer Life," prepared by the U. S. Department of Agriculture, and "The Ghost of Sylvester Graham," by Dr. James A. Tobey, in the February *Hygeia;* "Can Your Diet Pass This Color Test?" by Don Wharton, in January *Look;* and "Choose Fruits and Vegetables" and "Energy Plus," by Eva Selden Banks in the January and February issues, respectively, of *Parents' Magazine.*

New Educational Materials available for workers on the national nutrition program which have been sent out by Dr. Helen S. Mitchell include a poster entitled "Help America Win! Eat the Right Foods Including Whole-Grain Cereals" to promote the use of oatmeal, also a folder of recipes using oatmeal as an ingredient in cookies, prune pudding, vegetable soup, and bread. Two new posters, one giving the new nutrition symbol and slogan and the other including both the symbol and slogan as well as food rules, are now in production. Dr. Mitchell suggests that local nutrition committees may want to get in touch with local utility companies and recommend displays similar to those pictured in an article in *American Gas Association Monthly*, preprints of which have been sent out from her office.

Regional Representatives Appointed. The February 27 release from the Office of Defense Health and Welfare Services announces that regional representatives of the Nutrition Division have been appointed in four of the Social Security Board Regions as follows: Eleanor Enright, Arlington Building, Washington, D. C.; Ruth McCammon, 1006 Grand Avenue, Kansas City, Missouri; Hazel Bratley, No. Presa and E. Houston Streets, San Antonio, Texas; and Rae Russell, 785 Market Street, San Francisco. These representatives, acting as coordinators between the federal office and the state and local programs, will serve in an advisory capacity working with existing agencies to foster the program and will represent the Nutrition Division in the regional offices. Other regional appointments are being made as rapidly as possible.

Americans All. This is the title of a moving picture distributed by the Coordinator of Inter-American Affairs, described as giving "a brief overall picture of our fellow Americans: their exciting history, the conquering of the Aztecs, Mayas, and Incas, the revolts which began in 1810 and severed the New World from its colonial bondage to Spain and Portugal; their varied geography, the Andes Mountains, the Amazon River and its surrounding jungles, the great fertile plains of the Argentine; their world as it is today, with its vast sources of raw materials, its rapidly growing industry, its schools, its games, its work and play. By far the major portion of the film is concerned with the youth of Latin America. We see them on farms, on ranches, on giant sugar and coffee plantations, in factories and in mines, in schools, and on playing fields. . . . Made by Julien Bryan, it is a swift inclusive document which is intended to give the people of the United States a better understanding of their little-known fellow Americans to the south." This and other sound films (16 mm.) may be borrowed by organizations and schools for non-theatrical use by addressing The Coordinator of Inter-American Affairs, 444 Madison Avenue, New York City.

Recent Literature from U. S. Bureau of Home Economics includes a booklet entitled "Market Lists for Moderate-Cost and Liberal Meals" which gives in tabular form the kinds and quantities of food to be purchased for a week for children of different ages, adolescent boys and girls, and men and women according to their activity rating. Provision is made for calculating amounts per day for each person and totaling these amounts in order to make out the market order. On the last page of the leaflet are some "tips on buying and using food." Separate leaflets cover "Green Vegetables in Low-Cost Meals" and "Dried Beans and Peas in Low-Cost Meals." An illustrated, multigraphed booklet describes "Work Clothes for Women" designed by the Bureau of Home Economics, including a "laboratory dress" and a "food preparation dress," the latter a Butterick pattern.

Wheat and Flour Testing. The February issue of *Deco Trefoil*, house organ of the Denver Equipment Company, carries an interesting article on how wheat and flour are tested daily for one of the large baking companies for moisture content and for the solids as follows: protein, ash, salt, crude fiber, crude fat, and carbohydrates. A complete description, with illustrations and diagrams, of the Earle Process of milling flour is also included. A table of minerals and vitamins in entire whole wheat bread made from this flour shows the following values: total minerals, 2.13 per cent, calcium, .084 per cent, phosphorus, .38 per cent, iron, .0049 per cent, and vitamin B_1, 940–980 I.U. per lb. of flour in the entire whole wheat bread; as against 1.03 per cent, .027 per cent, 0.093 per cent, .0009 per cent, and 60–100 I.U., respectively, for the usual commercial white bread.

Chlorine Restrictions. A release of the Division of Industry Operations, War Production Board, dated February 28, states that after March 1, 1942, chlorine and the chlorine content of products shall be curtailed. Of interest to dietitians is the restriction of chlorine for textile bleaching to "50 per cent of one-twelfth" of that used in base period (July 1, 1940–June 30, 1941); and for hotel and commercial laundries to "10 per cent of one-twelfth" of that used in base period.

Further Restrictions on Aluminum. In order to conserve the supply of aluminum, an order of the War Production Board, February 5, states that aluminum shall not be used in the manufacture of any items or material except under specific contract or subcontract for the Army or Navy of the United States, the U. S. Maritime Commission, the Panama Canal, the Coast and Geodetic Survey, Coast Guard, Civil Aeronautics Authority, National Advisory Committee for Aeronautics, the Office for Scientific Research and Development, or any foreign country under the Lease-Lend Act; provided that the use of aluminum is required by the specifications of the contract. A limited exemption provides that aluminum may be used in manufacture where it was received subsequent to October 31, 1941 and prior to the effective date of this order, but only for the particular purpose so authorized.

Tin Conservation. Order M-81 and supplementary order M-86, issued by the War Production Board in February,

Laboratory Scene from Westinghouse Film "V-Men"

Better Nutrition is the Key to Better Family Health and a Stronger Nation

Proper dietary and the proper cooking of foods are essential to better nutrition.

Seeing the need for specific data on relative vitamin retention by "protective" vs. improper cooking, Westinghouse sponsored research to get the facts. Four popular vegetables were tested before and after cooking by both methods.

Results of this research are now available to teachers and nutritionists in sound motion picture and booklet form—another important Westinghouse contribution to our people at war. *Mail the coupon!*

VITAMIZED COOKING SAVES 91% OF VITAMINS*

**In recent tests of peas, potatoes, carrots and broccoli, an eminent research laboratory (name on request) proved that VITAMIZED COOKING retained an average of 91% of vitamins A, B1, B2, C and PP—while improper cooking retained an average of only 66%.*

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☐ Send free copy of your new booklet "Vitamin Retention by Electric Cooking."

☐ Send "V-Men" film (16 mm. with sound) for showing on either _____ or _____ (dates).

(The film will be prepaid to us and we will pay return shipping charges)

Name _____

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Organization _____

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RENNET DESSERTS

Good Flavor, Pleasant Eating, Quick and Easy Preparation, Low Cost reward those who serve Jullicum Rennet Desserts.

Butterscotch, Caramel, Chocolate, Coffee, Lemon, Orange, Raspberry, Vanilla, Wine Flavors.

One tablespoon to the pint milk; the pint size at $1.25 congeals and flavors 32 pints milk. Packed 6 pints to the case, any assortment, express prepaid.

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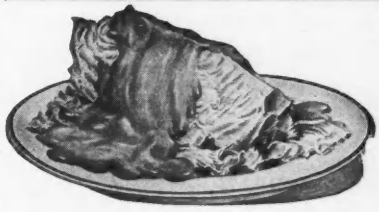
1724 Cayuga St. *Philadelphia.*

New!

CELLU SOYAMAISE

Salad Dressing



Accepted for use in sugar and starch restricted diets.

For Carbohydrate Restricted Diets

For salads and hot vegetables, a dressing of *known* food value. Made with soy bean oil, with a deliciously flavorsome tang. A tasty and pleasant way to add fat calories to the diet. Send for free sample.

FREE

Send for Cellu Catalog of foods for sugar and starch restricted diet.

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LOW CARBOHYDRATE *Dietary Foods*

CHICAGO DIETETIC SUPPLY HOUSE Inc.
1750 W. Van Buren St. CHICAGO ... Illinois

direct that there shall be no restriction upon the manufacture, sale or delivery of "primary products cans" or "special products cans" (for medical, dental, and important chemicals), except that number of sizes of cans and amounts of tin used in manufacture shall be limited. The supplementary order lists percentages of the canners' packs which shall be saved for the government for many fruits and vegetables. Use of tin in the manufacture of "secondary products cans" and "non-essential cans" is highly restricted or prohibited. "Primary products" (foods) and "secondary products" (also foods) are listed, together with sizes of cans allowed.

Price Ceiling on Pork. Some 90 per cent of America's pork products (including ham and bacon)—constituting more than half the nation's meat supply—was placed under 60-day temporary maximum wholesale price regulation March 10 by Price Administrator Leon Henderson, according to a recent release. The new price ceiling on dressed hogs and wholesale pork cuts applies to packers and their branch houses, car routes, brokers, jobbers, wholesalers, processors and slaughterers. It is expected to help importantly in holding down the cost of living, since these meats constitute a major item in the family budget. Last year the American public's bill for pork and other hog products topped $2,000,000,000, according to this release. Temporary Maximum Price Regulation No. 8 became effective March 23, 1942, two weeks after date of the order's issuance. Neither farmers nor retail outlets are covered directly by the order. However, Mr. Henderson pointed out that both would feel its effects. "Pork prices to the retailer are fixed under the regulation," the Administrator declared. "OPA will step into the retail picture immediately, should present retail price margins rise beyond possibly a slight increase to reflect changes in replacement costs, thus adding to the consumer's burden unduly." Since pork is a particularly important item in the budget of families with incomes under $500 per annum and of persons with fixed incomes, any justified complaints of price gouging will be followed by prompt controls at the retail source, even though such "policing" would require the services of a large field force.

Descriptive Labels for Canned Goods. The Labeling Committee of the National Canners Association, at its meeting in January in Chicago, unanimously adopted the following definition: "The adequate descriptive label for canned foods states separately, in specific, uniformly used terms, readily understood by the ordinary person, and in legible type so arranged as to be easily seen and read, every fact about the product which is genuinely useful to the consumer and which can be stated. For the sake of uniform use and of equitable and ready enforcement, each term is either self-defined or is based upon an objective test." A "consumer panel" for each can is recommended, to include the following facts when they apply to a product: name and correct varietal name (if known to consumer), style of pack, description of raw product and method of processing, seasoning, degree of syrup, degree of maturity, size of product (illustrated wherever possible), can size and volume or weight of contents, quantity in cupfuls (when units are small), quantity in pieces (when units are large), quantity in terms of servings, how to prepare and serve, proper use of packing medium, caution against overcooking, and, if possible, recipes and/or other serving suggestions.

Special Bulletin on Vitamins. The March issue of the *Bulletin of Lederle Laboratories* is devoted to the story of "sixteen vitamins and their deficiency diseases." Subject matter has been arranged by logical groupings of the fat-soluble factors and the water-soluble factors, with each of the 16 known vitamins covered under individual headings, followed by a brief discussion of the, at present, "unknown" vitamin factors. Full color reproductions of photomicrographs of vitamin B_1 and niacin crystals, taken by means of cross-polarized light, and a series of color photographs taken in the Lederle biological laboratories at Pearl River, New York, are included. The summary is concerned chiefly with the practical problems of vitamin administration. An extensive bibliography groups the references concerning specific vitamins, *i.e.* vitamin A, vitamin D, alpha-tocopherol (E), etc. This publication is available free on request to Lederle Laboratories, Inc., 30 Rockefeller Plaza, New York.

Mary I. Barber, food consultant to the Secretary of War, was a recent speaker before the Nutrition Council in San Francisco and other nutrition and home economics groups there. Miss Barber also spoke before the Kansas Home Economics and Dietetic Associations at their annual meetings in Topeka.

Isabel Bevier, professor emerita of home economics and founder of the department at the University of Illinois, Urbana, died at her home in Urbana March 17, 1942, at the age of 81. Miss Bevier was known to hundreds of dietitians, for in her 21 years at the University of Illinois over 5000 women studied home economics with her. She was a pioneer in research as well as administrative work. In 1907 she originated the use of thermometers in the cooking of meat and did early research on the cooking of various quality cuts of meat. She also did experimental work in jelly making which resulted in the publication of her "Principles of Jelly Making," in 1911. In 1917 she was given leave of absence to work under Herbert Hoover with the home conservation division of the administration. In addition to membership in many honorary and professional groups, she was awarded a certificate of recognition by Epsilon Sigma Phi, national honorary extension fraternity, in 1941, and honorary degrees of doctor of science were conferred on her by Iowa State College and the University of Wooster.

California Dietetic Association. A number of opportunities are being offered to dietitians in California to take refresher courses to prepare them for effective defense activities. The University of California Extension Division has two courses now in progress in Los Angeles, "Elements of Nutrition" and "Methods and Aids in Teaching Nutrition," designed for those preparing to teach nutrition to civilian groups. The University of Southern California has two courses to fill the same needs: namely, "The Chemistry and Physiology of the Vitamins" and "Food Products," for which university credit is offered.

The Department of Home Economics of the University of California at Berkeley will conduct two institutes, one on "Defense Nutrition," June 20–July 17; the other, "Defense Housing and Economics," July 20–August 7. No credit will be given but a certificate of attendance will be issued upon request.

The Home Economics Department of the University of California at Los Angeles is sponsoring a "Workshop and Institute in Home Economics" in the form of two 3-unit courses, each to run for three weeks during the 1942 summer session. One of these, entitled "Family Living in 1942," is planned for June 20–July 17; the other, "Recent Advances in Nutrition," is arranged for July 20–August 7. A number of outside lecturers have been secured to present special phases of nutrition in which each has gained distinction.

A general nutrition course is being sponsored by the Santa Barbara County Nutrition and Defense Council. The course, twelve 2-hour lessons, is intended to extend the subject of nutrition to the public so that the principles of

How to step up SALADS!

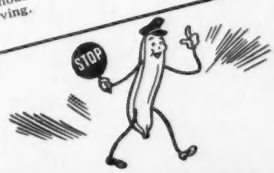
BANANA CABBAGE SALAD

Amount for 1 portion: ⅔ cup	4 quarts salad 24 portions	10 quarts salad 60 portions
Ingredients	*Amounts or weights*	*Amounts or weights*
Ripe bananas*, sliced or diced	1 quart (6 to 8)	2½ quarts (15 to 20)
Lemon juice	4 teaspoons	3 tablespoons
Cabbage, shredded	2 quarts	5 quarts
Green pepper, finely chopped	1 pint	1⅔ quarts
Salt	1 tablespoon	2½ tablespoons
Mayonnaise	½ pint	1⅔ pints
Prepared mustard	2½ tablespoons	6 tablespoons

*Use fully ripe bananas . . . yellow peel flecked with brown

Combine bananas and lemon juice. Add cabbage, green pepper and salt. Mix together mayonnaise and mustard and add to salad ingredients. Mix lightly. Serve with crisp lettuce or other salad greens. Garnish with additional mayonnaise and fluted bananas, if desired.

NOTE: If it is necessary to make this salad several hours in advance, peel, slice and add the bananas and lemon juice just before serving.



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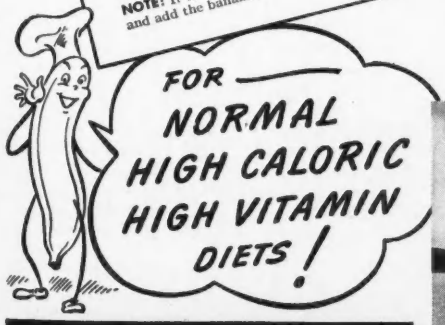

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Run the prongs of a fork lengthwise down a peeled banana, then slice crosswise for dainty crinkly-edged rounds.

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good nutrition may be applied by everyone. This course meets the requirements for the Red Cross certificate in nutrition. Food demonstrations that correlate with the lectures are conducted. In addition, simple lectures are being given to any organization that requests a lecture on any phase of nutrition and a series of radio talks is planned for a later time. The problem of school lunches, too, is being considered by a committee.

Writing in the February-March *Bulletin* of the association, Agnes Fay Morgan reported that the California State Nutrition Committee for Defense, whose object is to coordinate all efforts for improvement in human nutrition and to weld, speed up and re-shape work already initiated, has been meeting once a month during the past year and that several subcommittees are carrying on the committee's program. These deal with: support and encouragement of the food stamp plan and the school lunch program of the Surplus Marketing Administration; problems of nutrition of low-income families; the production of illustrative materials on nutrition, *e.g.* movies and radio service; survey and improvement in nutrition of defense industrial workers; organization of conferences and refresher courses for dietitians, teachers and others professionally engaged in nutrition work; and nutritional status surveys, particularly of children.

The Los Angeles City and County Committee on Nutrition has organized three subcommittees: a nutrition courses committee, a school lunch and surplus commodities committee and a publicity committee.

The Alameda County Defense Council has been organized under the direction of the State Defense Council. A refresher course for nutritionists is being sponsored by the County Nutrition Committee to furnish trained nutritionists for the Red Cross and other groups. A subcommittee is organizing a speakers' bureau which will supply trained nutrition speakers for women's clubs, civic groups and any other groups who might request such speakers.

Dr. A. E. Koehler, Sansum Clinic, is in charge of the nutrition program for Santa Barbara County. Among those assisting him are: Irene Fagin, county home demonstration agent; Dr. Helen Hart, assistant school physician, Santa Barbara city schools; Charlotte Biester, acting head, Home Economics Department, Santa Barbara State College; Alice V. Bradley, Home Economics Department, Santa Barbara State College; and Ruth Bowden, dietitian, Sansum Clinic.

New food tables for low-cost diets, including unit costs and recent mineral and vitamin figures, have been compiled by the Diet Therapy Committee of the California Dietetic Association. They may be obtained for 25 cents from Lavern Owens, 715 Duboce, San Francisco.

Cincinnati Dietetic Association. The January meeting had as its theme "How Can We Meet the Ever Mounting High Prices?" Mr. Robert Geist, Hamilton County Purchasing Agent, Helen Hawthorne, Mills Restaurant, and Mrs. William Kirschner, Kirschner's Restaurant, led the discussion.

The Community Education Committee has prepared about sixteen articles for the "Save-A-Life" series of paragraphs on health topics published daily in the Cincinnati *Times-Star*. Some of these items have been prepared by student dietitians, and some by graduate dietitians in greater Cincinnati.

Refresher courses are being offered at the School of Household Administration, University of Cincinnati, for 8 weeks during the late afternoon period. Eleanor Maclay is directing a course on nutrition especially planned for teachers or leaders of classes in food preparation and nutrition and, with the assistance of other members of the faculty, a course entitled "Nutrition and Home Management for Social Workers" which places special emphasis on lower income budgets.

Other activities in which Cincinnati dietitians are engaged in connection with the nutrition program of the Public Health Federation are: cooperation in the Volunteer Corps of Nutrition Instruction, a consultant service for discussion groups sponsored by the Women's League of the Community Chest; and publication of the *Family Cupboard*, a one-page leaflet on nutrition, food preparation, and homemaking, prepared by the Committee on Family Economics and distributed to families receiving relief or service from public or private agencies, 9000 copies of which have been distributed per month.

Cleveland Dietetic Association. At the February meeting Hazel Goff, director of nurses, St. Luke's Hospital, spoke on "Pinch Hitting for a Dietitian in the Last War."

Members of the association have been offered a refresher course on "Methods of Teaching the Public" at Western Reserve University under the direction of Dr. Helen Hunscher, which is to be preparatory to instructing the canteen course of the Red Cross.

Florence Levy, president of the association, and formerly chief dietitian, Sunny Acres Sanitorium, Warrensville, is now chief dietitian, Mt. Sinai Hospital, Cleveland. Dorothy Proud has resigned as assistant director of dietetics in administration, University Hospitals, and Helen Mallory, formerly of Mt. Sinai Hospital, Cleveland, has been appointed to the position. Mary Ruth Curfman, formerly of St. Luke's Hospital, New York, is director of dietetics at Miami Valley Hospital, replacing Mrs. Alta Hirsch, now in California where Dr. Hirsch is in military service.

Dorothy Ward has announced her marriage to Mr. Joseph Glazer.

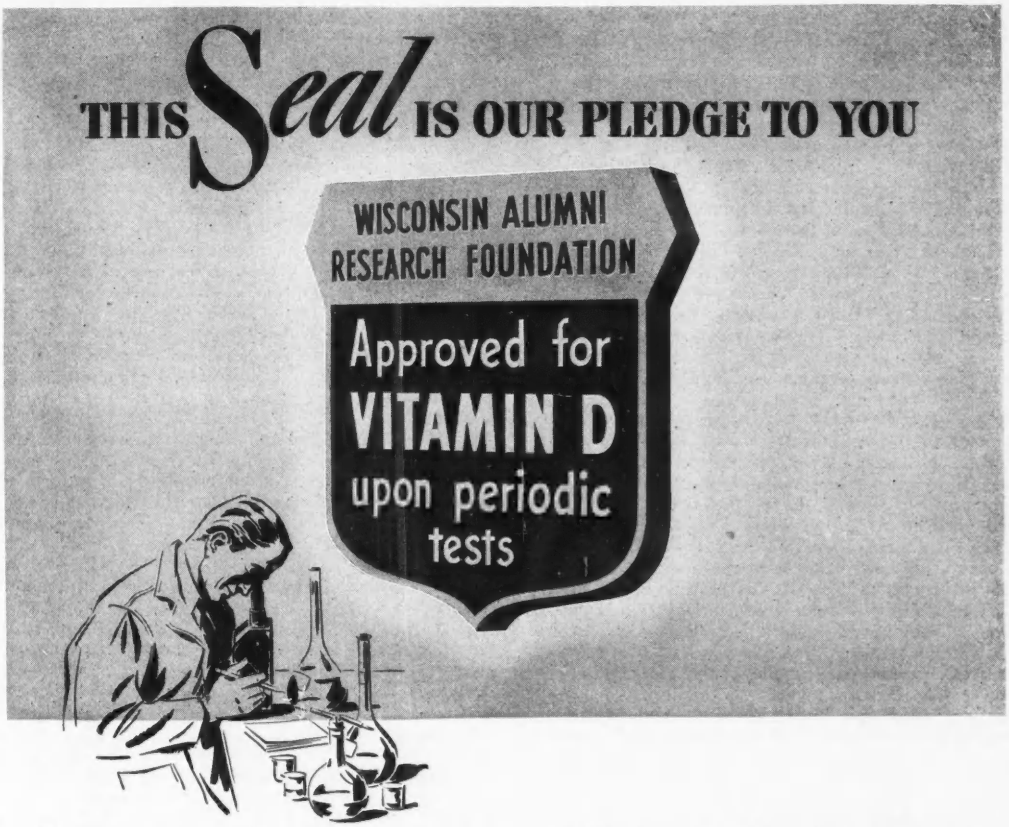
Connecticut Dietetic Association. At the winter meeting which was held at St. Joseph College, West Hartford, March 26, the program included talks on "Organizing for Emergency Feeding" by Eleanora Sense, and "The Organization of the Hartford Canteen Corps" by Mrs. Isola Denman Robinson and Dorothea Behm, and a report by Beatrice Hall of the nutrition classes conducted in Connecticut. Alice Manek, president, reports in *News Notes*, the publication of the association, that results of the survey to determine the number of dietitians willing to teach nutrition and canteen courses were very gratifying. She urges better planning and organization of their time on the part of dietitians in order to give more time to this work.

The Hartford chapter announces the election of the following officers: president, Josephine O'Leary; vice-president, Esther Bassett; secretary-treasurer, Helen Robinson Wells; program chairman, Catherine McAuliffe.

Elizabeth Jensen, nutritionist, Connecticut Dairy and Food Council, and past-president of the association, has resigned to become nutrition specialist, Extension Service, University of Illinois. Margaret Colwell is replacing Mrs. Mary Finch Niles as assistant dietitian at Waterbury Hospital.

Helen Robinson, Veterans' Home, Rocky Hill, was married to Mr. Graham Wells, Hartford, December 13.

Kansas Dietetic Association. At a meeting in Topeka, March 20, the following speakers and subjects were included in the program, according to Mrs. Bessie Brooks West, program chairman: "The Effect of Processing on the Nutritive Value of Foods," Dr. Gladys Vail, Kansas State College; "Woman's Place in Commercial Food Work," Mr. Myron Green, The Myron Green Cafeterias, Kansas City, Missouri; "Role of the Dietitian in the Defense Program," Mary I. Barber, food consultant, War Department; "Dietary Helps in the Treatment of Certain Nutritional Diseases in Childhood," Dr. F. C. Neff, head, De-



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partment of Pediatrics, University of Kansas Hospitals; "The Hospital Dietitian in Australia," Aileen Morrison, University of Kansas Hospitals; "A Dietitian in an Army Service Hospital," Elizabeth Murray, Station Hospital, Fort Riley; "The Challenge of Unused Human Resources," Dr. A. J. Carlson, University of Chicago.

The following officers were elected on March 20: president, Mrs. Bessie Brooks West, Kansas State College, Manhattan; president-elect, Audris Rife, Grace Hospital, Hutchinson; vice-president, Elizabeth Murray; treasurer, Eunice Youngquist, Corbin Hall, Lawrence; and secretary, Pauline Richardson, Stormont Hospital, Topeka, Kansas. Section chairmen appointed include: Professional Education, Kathryn Tissue, University of Kansas; Community Education, Mary L. Smull, Kansas State College; Administration, Mrs. Ruth Heckler, Wyandotte High School Cafeteria, Kansas City; and Diet Therapy, Martha Richardson, Newton Hospital, Winfield. Gladys J. Sissel, University of Wichita, is chairman of publicity.

Massachusetts Dietetic Association. A nutrition exhibit sponsored by the Massachusetts Committee on Public Safety will be on display during the spring and summer at the Garden Information Center, Horticultural Hall, Boston. It will consist of two gardens, the first of which will be made up of six garden booths in the colors of the rainbow, each booth to have the name of a food constituent on its awning and a display of the food sources in the booth, the whole effect that of a garden party. The second garden will contain six lifelike figures of children standing behind a teeter-totter on which are placed the recommended amounts of protective foods to give a "balanced" diet. The public will be invited to remove any of the foods and see the see-saw go off balance. Rae Goldberg is heading the committee, assisted by: Pearl Williams, Food Clinic, Boston Dispensary; Mertha Kaplinsky, Food Clinic, Beth Israel Hospital; Mrs. Miriam Black, Boston Chapter, Red Cross; Mrs. Louisa S. Rilton, Family Information Center, Jordan Marsh Company; Mrs. Imogene Wolcott, First National Stores; and Mrs. Evelyn Engalls, artist.

Recent graduates to receive appointments include: Helen Garret, assistant therapeutic dietitian, Peter Bent Brigham Hospital; and Gertrude Werner, dietitian at an Army Hospital, Seattle.

Marriage announcements include: Isabel Cook to Mr. John Nolan; Gertrude Green to Mr. Lyman Holder; and Rudell Cox to Mr. William Willoughby, February 14, 1942.

Recent appointments include: Mrs. Louise Naylor, assistant dietitian, Baker Memorial Hospital; Mrs. Genevieve Connick, Phillips House; and Mrs. Julia Roybal, head dietitian, New England Hospital for Women and Children.

New Jersey Dietetic Association. On March 11 the Administration Section held a meeting at All Souls Hospital, Morristown, with Sophia Morris, Beth Israel Hospital, Newark, presiding. A questionnaire on the sugar question and how it was being met by restaurants, cafeterias and institutions was composed, the results of which will be tabulated and made available to members at a later date. An evaluation of the canteen course offered by the American Red Cross is also being made and will be reported on at a later meeting.

Greater New York Dietetic Association. A joint meeting with members of the Home Economics Association of Greater New York and New Jersey was held March 19 to "bring the latest news from the research and industry fronts on the national nutrition program and to accelerate efforts now under way to spread the propaganda and story of good nutrition." Dr. Robert R. Williams, director of the Bell Telephone Laboratories, spoke on the subject "Nutritional Reform—Now!" and Mr. Paul Willis, president of the Associated Grocery Manufacturers of America, on "Joint Government-Industry National Nutrition Program."

Further details about the preliminary meeting of the successful refresher course, program for which appeared in this JOURNAL for April, have been received from Lillian Myers, Montefiore Hospital. She writes that Lillian Anderson, nutritionist, Community Service Society, and member of the Nutrition Committee of Greater New York, outlined the work that is being carried on by the Federal Security Agency under Dr. Helen S. Mitchell and that of the Nutrition Committee of Greater New York, of which Dr. Grace McLeod is chairman. The latter group has prepared an outline of six lessons on food and food demonstrations for use by volunteer teachers of nutrition, and supplies speakers and teachers in Westchester County and New York City. The Office of Civilian Defense in conjunction with the Nutrition Committee is working with restaurants and other commercial organizations in an attempt to raise food standards. It has also helped to promote a nutrition symposium at New York University.

Continuing with the subject "What Does a Nutrition Program Mean?" Pauline Murrah, Department of Health, New York, outlined the joint nutrition program in which five city bureaus: namely, health, education, welfare, hospital, and markets, in addition to the Red Cross and the Nutrition Committee, participate. She stressed the need for trained people for volunteer teaching, and told of the several refresher courses that had been planned: one at Teachers College just completed, one at Pratt Institute, and that sponsored by the Greater New York Dietetic Association; also the course for public school teachers to be taught by home economics instructors in the schools. A course to train "demonstration food lieutenants" is being developed as an experiment. Miss Murrah mentioned that a promotion committee had been publicizing the nutrition program through the newspapers, displays in subways, and literature distributed by public health stations, etc., and that posters and printed material which might be of help to volunteer speakers in teaching the laity were available at the speakers' bureau.

Speaking as a health officer for the Mott Haven Health District, Dr. Jerome Meyers told about the division of New York City into 30 health districts with approximately 250,000 people in each. A public health station in charge of qualified medical directors distributes health information to the public. He stated that in his district, the Bronx County Medical Association and hospitals in the Bronx are supplying speakers. When possible, pertinent films are shown in conjunction with the talks, and exhibits are on display at health centers for observation by clinic patients. Consultation services in nutrition are available in public clinics, and a radio station is to broadcast announcements of the program in English and foreign languages.

On the subject "How Does the Community Respond?" Mrs. William Ladd, in charge of a midtown health district, stated that by means of the existing organizational set-up a highly complex group in this district were being reached. In order to do this it was necessary to persuade churches, schools, social groups, etc., to include nutrition for health as a part of their routine programs for 1942. The advance work was carried on through the efforts of a professional staff of three—a community organizer, a nutritionist, and a research sociologist, aided by a local planning group representing the five city departments, the district health officer and a staff of volunteers. Various methods of procedure were followed. For instance, a committee member would approach the ladies' aid or other church organization and talk to them about the importance of nutrition in war times and suggest that the members might like to discuss the new techniques of cooking, or how to meet a rising food market. Principals of public schools were very glad to permit nutri-

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tion volunteers to speak before parents' meetings, and to permit home economics teachers to give classes to mothers in the school kitchens. Arrangements were also made for speakers to address groups in the schools. Groups of mothers have enrolled in classes, and private and parochial schools, too, have shown a willingness to cooperate. A series of group meetings within one of the large department stores in the area, it is hoped, will prove to be a pattern for use in others.

Mrs. Gertrude Gates Mudge described her experience in teaching professional people—social workers and nurses—at the Washington Heights Health Center. She found that demonstrations were not so popular as straight lectures with this group. She also addresses P.T.A. groups in public and private schools and is developing a consultation service at the Center.

At the conclusion of the session Ruth Barker, Community Service Society, spoke of the four lectures which were prepared and used in the Bronx. These lectures do not include demonstrations and are titled: "What We Eat and Why," "The Balanced Menu for Your Family," "Conservation of Food Values in Cooking," and "Your Food and Your Money." The mimeographed outline of the lectures gives many suggestive subheadings and specific information under such subjects as the interpretation of the national nutrition yardstick in terms of daily foods, a daily meal plan, as well as references to government bulletins. Using these outlines as a basis for her own talk, Lillian Myers enumerated the various questions that were asked her by audiences to whom she had spoken on nutrition during the past few months.

New York State Dietetic Association. The annual convention is being held at the Hotel Utica, Utica, May 7–8. The local Chamber of Commerce has requested the cooperation of the association in sharing its educational exhibits, movies and radio time as a public service. Mrs. Ethel Lewis Marth, state president, will address the luncheon meeting of Kiwanis in Utica the day before the convention opens.

Participating in a television program at Schenectady was a new experience for Dr. Caroline Sherman Lanford and Jessie Cole on March 12. Their presentation was entitled "Helping the Housewife Feed Her Family."

Genevieve Moyer is now on duty at Fort DuPont, Delaware.

The Buffalo association has lost an able and enthusiastic member in the death of Mrs. Georgia (McClellan) McKever on March 8. She was chief dietitian at the Niagara County Sanitorium near Lockport for eleven years. While unable to attend regular meetings in the winter months, Mrs. McKever annually invited the association for their June picnic and her enthusiasm and hospitality helped make these gala occasions. She was an associate member of the New York State and American Dietetic Association, and a frequent attendant at annual conventions of both.

In March the Buffalo group held their regular meeting at the College Club. After discussing plans for a nutrition exhibit at the Buffalo Restaurant Show in April, Luella Murdough, Deaconess Hospital, gave an interesting survey of Army food service.

North Carolina Dietetic Association. The ninth annual meeting of the North Carolina Dietetic Association was held March 27–28 in Charlotte. The importance of improving the nutritional status of the population was emphasized throughout. The program included the following addresses:

The Nutritional Status of North Carolinians: John F. Kendrick, M.D., assistant chairman, nutrition committee, State Board of Health.

How the Professionally Trained Person May Contribute to National Preparedness: Gladys Kinsman, Ph.D., professor of home economics, Woman's College, University of North Carolina.

Red Cross Nutrition Work: Catherine M. Leamy, director, Nutrition Service, Eastern Area, Alexandria, Virginia.

Foods and Nutrition in the Nursing Curriculum: Ann Henshaw Gardner, dean of nursing education, Presbyterian Hospital, Charlotte.

Food Merchandising in the S. & W. Cafeterias: E. F. Blair, purchasing agent, S. & W. Cafeterias.

Meulengracht Diet in the Treatment of Bleeding Ulcers: R. Z. Query, M.D., Charlotte, N. C.

Diet for Patients with Cardiac Disease: Robert McMillian, M.D., associate professor of clinical medicine, Bowman-Gray School of Medicine, Winston-Salem.

Nutritional Aspects of Anemia: George Harrell, M.D., pathologist, Bowman-Gray School of Medicine.

The Dietitian Volunteers: Nelda Ross, president, American Dietetic Association, director of nutrition, Presbyterian Hospital, New York.

Recent appointments include: Roberta Jones and Alice Duncan, Charlotte Memorial Hospital, to Camp Blanding, Florida, and Stark Hospital Base, Charleston, respectively; Margaret Ross and Margaret Wiggins, Presbyterian Hospital, New York, to Charlotte Memorial Hospital; Carlene Millican, who trained at Vanderbilt Hospital, and Elizabeth Dickinson, who trained at Denver General Hospital, to Duke University Hospital; Clarabel Graham, Moore County Hospital, to Station Hospital, Fort Bragg; and Ada Howe, Duke University Hospital, to Fort Monmouth, Redbank, New Jersey.

The following marriages have been announced: Arthealis Mitchell, assistant dietitian, Duke University Hospital, to Dr. W. F. Hollister, Duke University Hospital; Ernestine Robertson, Duke University Hospital, to Dr. H. B. Kernodle, Duke University Hospital; Elaine Fleischer, who completed her student dietetic course at Duke University Hospital in September, to Mr. Clyde Hardy, assistant superintendent, Duke University Hospital; Pearl Turner, assistant dietitian, Rex Hospital, to Mr. Francis Peebles, Farm Security Administration, Raleigh; Doris Miller, Rowan Memorial Hospital, to Mr. V. U. Grose, now residing in Greensboro; and Dovie Chenault, Guilford College, to Mr. Dewey D. Bardwell.

Ohio Dietetic Association met April 21–22 at the Neil House, Columbus. The program included: "Techniques for Lengthening Life of Equipment," Mrs. Mabelle Ehlers, Michigan State College; "Materials Available for Food Production Units," a representative of the Priorities Division, War Production Board; "Hospital Personnel and Their Health Education," W. B. Forster, City Hospital, Akron; "Patient Education—In-Patient and Out-Patient," Elizabeth Perry, City Hospital, Cleveland; "Public Education," Mrs. Alice H. Smith, The Cleveland Health Council; "The Use and Availability of Foods in Wartime," Guy Clark, Cleveland Hospital Council; and "Hospital Employment Programs," Dr. J. L. Otis, Western Reserve University, Cleveland, Ohio. At a round table, with Minerva Harbage presiding, the following topics were discussed: "Steps Taken to Familiarize Employee with Emergency Set-up," R. E. Bodwell, director, Huron Road Hospital, Cleveland; "Salvaging of Dietary Waste," Edwin Miller, pharmacist, City Hospital, Akron; and "Current Dietary Problems." At the final session devoted to "The Red Cross Nutrition Program" Mrs. Marjorie Siler presided and Catherine M. Leamy, director, Nutrition Service, Eastern Area, spoke.

Oklahoma Dietetic Association held its annual convention April 24–25, Skirvin Hotel, Oklahoma City. Hazel Larick, vice-president, presided at the opening session; Maxine Turner, president, gave the address of welcome and Margaret Durett, president-elect, the response. The invocation was given by Dr. C. Q. Smith, president, Oklahoma City University. Guest speakers were W. B. Renfro, chief inspector, State Market Commission, Oklahoma City; Frances MacKinnon, president-elect, American Dietetic

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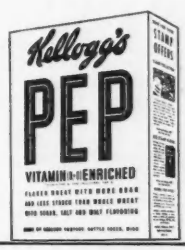

Association; Ruth MacClemmons, Office of Department of Health and Welfare; Clara Cerveny, chairman, community education extension division, Oklahoma A. and M. College; Laura Miller, University of Oklahoma; and Curtis Moutrey, state chemist, Oklahoma City.

Philadelphia Dietetic Association. At an Administration Work Conference on March 10, with Lucille F. Refshauge as chairman, Lillian F. Hack led a discussion on "What Are the Dietitian's Duties as a Buyer?" and Evelyn A. Carpenter on "What Are the Dietitian's Responsibilities in Buying When There Is a Purchasing Agent in the Institution?" Mr. Arthur S. Bier, S. and W. Fine Foods, Inc., demonstrated the "Purchasing of Canned Goods," and Mrs. Quindara Oliver Dodge spoke on "Fine Points in Administration."

The University of Pennsylvania Hospital has recently changed the nurses' dining room service from waitress to cafeteria, making it possible to serve a miscellaneous group of hospital personnel from the same dining room and offer a larger choice on the menu. Recent appointments at the University Hospital are: private patient dietitian, Margaret Mocku, graduate of Oklahoma City training course; metabolic dietitian, Frances Kalcevic, graduate of Ancker Hospital; cafeteria dietitian, Roberta Lescallet, formerly at Sibley Memorial Hospital; and Clare Osborne, graduate of Cooke County Hospital, who will assist Dr. I. S. Ravdin on a research problem, and with the private patient service.

Henrietta Pribnow was a guest speaker at a meeting of the Metabolic Division, Philadelphia County Medical Society, devoted to "War and the Diabetic." Betty Brewer and Miss Refshauge have planned a series of nutrition lectures for the Women's Auxilliary, Mt. Sinai Hospital. Miss Refshauge is a member of the publication committee for the Philadelphia Metabolic Association's new quarterly publication, *Diabetic Digest*, 2016 Delancey Place, of which Dr. W. Wallace Dyer is editor.

Dobbins Vocational School is offering an evening course on nutrition and merchandising for managers of the American Stores Company, Inc., conducted by Elizabeth Miller, Philadelphia General Hospital.

Eleanor Pierson La Pointe, formerly on the staff of the Pennsylvania Hospital, is doing graduate work at Iowa State College, and Edna Bruno, formerly therapeutic dietitian, Mt. Sinai Hospital, is working on a fellowship and teaching quantity cookery at the same college.

Violet Lake has announced her marriage to Mr. Harris Weber, and is residing at 404 Waterloo Street, Toronto, Canada.

Recent appointments include: Miriam Adams, formerly at Fort Meade, now staff dietitian, Mt. Sinai Hospital; Marion Mowbray, formerly administrative dietitian, Temple University Hospital, now head of the dietary staff, Abington Hospital; Ruth Harrer, formerly metabolic dietitian, University of Pennsylvania, now laboratory technician at an industrial plant, York Lane, Delaware; Mary Ann Aselin, trained at University of Iowa Hospital, now on the staff of the Philadelphia General Hospital; Ethel May Diem, assistant dietitian, Friends' Hospital; Mary Gordon, now nutritionist, Babies Hospital; Mary Wesner, therapeutic dietitian, Pottsville Hospital; and Margaret Berry, formerly at Massachusetts General Hospital, and Virginia Gross, now at Episcopal Hospital.

Rhode Island Dietetic Association. The association met jointly with the Rhode Island Council of Nutrition for Defense on February 26. Robert S. Harris, Ph.D., Massachusetts Institute of Technology, and special consultant to the Committee on Food and Nutrition of the National Research Council, spoke on "Better Nutrition of Industrial Workers as a War Measure."

Henderika Rynbergen, New York Hospital, was the speaker at the March meeting.

In April members of the association were guests of the R.C.H.D. Association (restaurants, caterers, hospitals, and dietitians).

Many of the members have been certified by the Red Cross to teach nutrition and canteen courses to lay groups.

Texas Dietetic Association held its eighth annual convention in the Home Economics Building, Austin, March 13–14. The program included the following:

Address of Welcome: Rosalie S. Godfrey, president, Central Texas Dietetic Association; and Mary E. Gearing, chairman, Department of Home Economics, University of Texas.

Response: Mary B. Clark, president, Texas Dietetic Association.

Address: Dr. Helen S. Mitchell, principal nutritionist, Office of Defense Health and Welfare Services, Washington, D. C., followed by round-table discussion on nutrition in national defense led by Dr. Mitchell.

Significance of the B-Vitamins in Nutrition: Dr. Roger J. Williams, professor of chemistry, director of the Biochemical Institute of Research in Chemistry, University of Texas.

Meat Selection and Its Effect on the Food Budget: M. O. Cullen, director, Department of Meat Merchandising, National Live Stock and Meat Board.

Meat Cookery and Its Relation to Cost: Jessie Alice Cline, special representative, National Live Stock and Meat Board.

Increasing the Yield of Cooked Meats Through Improved Carving Methods: M. O. Cullen.

Emergencies and Equilibriums: Gladys E. Hall, educational director, American Dietetic Association.

Packaging Food from the Manufacturers' Standpoint: Dr. Gene Spencer, professor of home economics, University of Texas.

The Importance of Dehydrated Foods and Some Problems of Dehydration: Luis H. Bartlett, mechanical test engineer, Bureau of Engineering Research, University of Texas.

The Flour Enrichment Program: Val Colb, associate director, Winthrop Chemical Company, Chicago.

Utah Dietetic Association. At a joint meeting with the State Nutrition Council in March, several films on vitamins were shown by an E. R. Squibb and Company representative.

The annual meeting was held April 16 with Gladys E. Hall as guest speaker.

Mr. and Mrs. Stanley Snarr (Virginia Parkinson) and Mr. and Mrs. Tom Gore (Alice Todd) announce the birth of daughters.

Sybil Christenson, formerly at St. Mary's Hospital, Rochester, is now at Latter-Day Saints Hospital, replacing Mrs. H. M. Stewart (Elaine Frogner), who resigned to join her husband in Ogden. Evelyn Bushey Quinn has accepted a position at Fort Douglas, replacing Virginia Parkinson Snarr.

News from our Advertisers and Exhibitors. Again Mary Dahnke of the *Kraft Cheese Corp.*, Chicago, has come forth with a new and even more inviting batch of recipes using Kraft products. Arranged in booklet form and with each recipe illustrated with a photograph of the finished product, they are divided into the following classifications: salads and snacks, new cream cheese delicacies, casserole cookery with cheese, salads "tossed" and otherwise, uses for "Velveeta," appetizers, and a group of miscellaneous recipes in which "Parkay" is used as shortening. The last-named group includes several tempting cookie recipes as well as directions for making muffins, frosting, and pastry with this margarine product.

The *Maltex Company*, Burlington, Vermont, is offering free to teachers of nutrition classes some interesting new teaching materials, including a height-weight wall chart, a notebook page with graph to study growth development, a colored wall poster and one to be colored by children, a primary reading booklet, also a breakfast chart in the form of a Robinson Crusoe adventure, a new food value card for Maltex cereal for doctors' and dietitians' files, a booklet, "The Story of Maltex Cereal," with a map by Charles Forbell, a daily diet record sheet, a recipe folder for family

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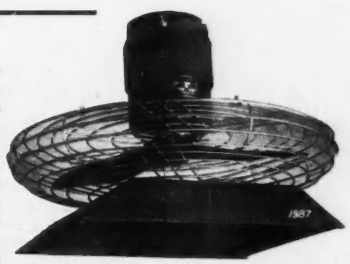

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meals and one for serving one hundred people, blotters displaying the essentials of a "100% breakfast," and a wall chart for recording sources of food constituents with accompanying booklet of outline drawings of common foods to be cut out and colored. Mary Pearl, home economist for the company, announces that a new short play is also available on the theme of good nutrition for national defense.

The employees of *Hoffman-La Roche, Inc.*, Nutley, New Jersey, have raised a "Victory Flag" over their plant to symbolize the adoption of the payroll deduction plan for the purchase of Defense Savings Bonds by the entire personnel. Bond purchases for the company will total over $100,000 a year.

Dietary Personnel in Municipal Hospital

One of the big problems in hospital operation is that of the dietary department. For supervision of this department there will probably be a head dietitian and she will have assigned to her five or six assistants in accordance with the service necessary. On the head dietitian falls full responsibility for the proper feeding of all in the institution including patients and employees. Her assistants are assigned to sub-service in the department, such as special diet kitchen, nurses' home, staff house, and the employees' service. Under the supervision of the head dietitian are the employees in kitchens and the dining rooms. A schedule for assignment of kitchen and dining room help to which effort is made to adhere, is as follows:

> For a census of 25 to 50, a cook and a helper would be provided.
>
> For a census of 50 to 100, a cook, 1 assistant cook and 1 helper would be provided.
>
> For kitchen service, additions to the foregoing call for 1 additional cook for each 400 additional census of patients and 1 kitchen helper for each additional census of 100.
>
> In the doctors' and nurses' kitchens, 1 additional cook for every additional 200 and 1 additional helper for each 50.
>
> In the employees' kitchens, provision is made for 1 additional cook for each additional 300 and 1 additional helper for each additional 75.
>
> Personnel in special diet kitchens depends on the number of diets, and the availability of student nurses.
>
> In the dining rooms, 1 waiter or waitress is provided for every 21 to 30 persons to be served where table service is conducted.
>
> In the cafeteria services, the number of help allocated is 1 to every 30 to 50 being served.

Following the dietary service we come to the general housekeeping. This consists of the assignment of sufficient help for the general house work in the staff house, nurses' home, and, in some cases, general housekeeping in the wards. The ratio for the staff house and nurses' home is usually one chambermaid for every twenty rooms and such additional help as is necessary for the hallways, baths, etc. In an institution where the ward housekeeping is under a general supervisor, the hospital helpers assigned to such wards do the cleaning under the supervision of the general housekeeper. A maid or a cook is assigned to each of the officers of the institution who are on a maintenance basis.—*Loughran, W. A.: Yardstick for municipal hospital personnel. Hospitals, 16: 106, 1942.*